F15
V643

Price One Shilling Net,
or 25 Cents.

December, 1912.

LIBRARY
RECEIVED
DEC 24 1912

THE VETERINARY JOURNAL

A Monthly Review of Veterinary Science.

Editors for Great Britain and Ireland:—

FREDERICK HOBDAY, F.R.C.V.S., F.R.S.E.,
FORMERLY PROFESSOR IN THE ROYAL VETERINARY COLLEGE, LONDON.

GEO. H. WOOLDRIDGE, F.R.C.V.S., M.R.I.A.
PROFESSOR OF HYGIENE, MATERIA MEDICA AND THERAPEUTICS IN THE ROYAL VETERINARY COLLEGE, LONDON.

Annual Subscription for the British Empire, 12s. Post Free; for the United States, $3.00.

LONDON.
BAILLIÈRE, TINDALL & COX,
8, HENRIETTA STREET, COVENT GARDEN.

AUSTRALIA AND NEW ZEALAND.
Messrs. GORDON & GOTCH, Ltd.,
Melbourne, Sydney, Wellington, &c.

NEW YORK:
W. R. JENKINS,
851 and 853, Sixth Avenue.

CHICAGO:
ALEXANDER EGER,
132, West Lake Street.

Entered as Second-Class Matter in the U.S. Post.

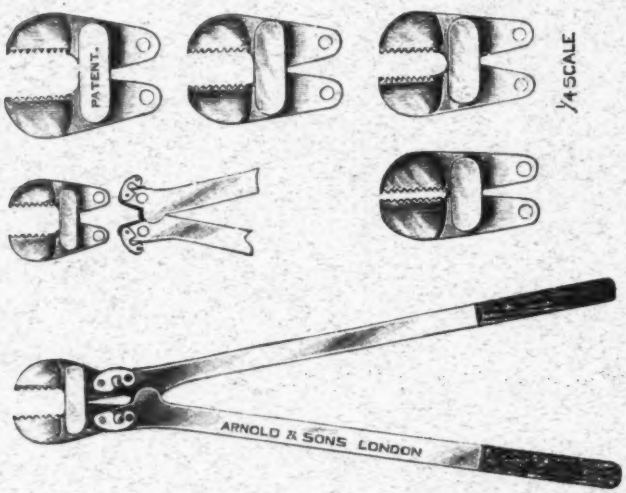
No. 450.

"ARNOLD'S"

Patent Molar Tooth Cutter,

WITH REMOVABLE CUTTING BLADES
OF DIFFERENT WIDTHS.

The lightest, most powerful and reliable cutter ever brought before the notice of the profession.



PRICES.

With 1 Cutting Blade **£3 0 0**

Extra Blades, 17/6 each.

With 4 Cutting Blades of different widths ... **£5 12 6**

ARNOLD & SONS,

Veterinary Instrument Manufacturers,

GILTSPUR STREET, LONDON, E.C.

Telegraphic Address:
INSTRUMENTS, LONDON.

Telephone Number:
City 5240 (3 lines).

AUTHORITATIVE BOOKS ON HORSES

By Captain M. H. HAYES, F.R.C.V.S.

STABLE MANAGEMENT AND EXERCISE A book for Horse Owners and Students. New Edition, Revised and Enlarged. Illustrated by drawings and numerous reproductions of photographs taken specially for this work. 1 vol., cloth, gilt. 12s. net.

VETERINARY NOTES FOR HORSE OWNERS An Illustrated Manual of Horse Medicine and Surgery, written in simple language, with 274 illustrations. Seventh Edition, Revised throughout, considerably enlarged, and 124 new and original photographs added. 1 vol., Buckram, gilt. 15s. net.

POINTS OF THE HORSE A Treatise on the Conformation, Movements, Breeds and Evolution of the Horse, with 658 illustrations. In cloth gilt, and gilt top. 34s.

RIDING AND HUNTING A New Revised and Enlarged Edition. Fully illustrated with upwards of 250 reproductions of Photographs and Drawings, including new illustrations. In 1 vol. 16s. net.

ILLUSTRATED HORSEBREAKING Third Edition. Revised and Enlarged, with 130 illustrations from drawings by J. H. OSWALD BROWN, and from photographs specially taken for the work. 1 vol., cloth, gilt. 12s. net.

THE HORSEWOMAN A Practical Guide to Side-Saddle Riding. By Mrs. HAYES. Edited by Captain HAYES. Third Edition. Revised and Enlarged, with new chapters, and with 156 illustrations from drawings and original photographs, including new photographs for this edition. 1 vol., cloth, gilt. 12s. net.

VETERINARY PATHOLOGY By FRIEDBERGER & FRÖHNER. Translated and edited by Captain M. H. HAYES, with notes on Bacteriology by Professor R. TANNER HEWLETT, M.D., D.P.H. New Edition. Revised and Enlarged, and re-translated from the Sixth German Edition. 2 vols., cloth, gilt. 21s. net.

London: HURST & BLACKETT, Ltd., Paternoster House, E.C.

CONTENTS.

	PAGE
EDITORIALS—	
Veterinary Officers' Fees.—The Work of the Newly-constituted National Veterinary Association	667
Entertainments for the Victoria Veterinary Benevolent Fund	668
GENERAL ARTICLES—	
The Use of "Pituitrin" for Uterine Inertia in Dogs and Cats. By G. H. LIVESEY, M.R.C.V.S.	669
Sterility and Impotence in Male Domestic Animals. By THOMAS H. DALE, M.R.C.V.S.	674
A *Résumé* of our Knowledge on the Occurrence of *Gnathostomum Spinigerum* in India and its Relation to a similar Parasite found in Man. By S. N. MITTER	687
Conditions under which Government Veterinary Surgeons' Services are available to the Public in Rhodesia	690
CLINICAL ARTICLES—	
A Dentigerous Cyst. By A. J. CATTELL, M.R.C.V.S.	692
Is Crib-Biting Hereditary? By W. LOTHIAN, M.R.C.V.S.	692
Bacterial Necrosis of the Lungs of a Horse. By GEO. WOOLDRIDGE, F.R.C.V.S.	693
CANINE CLINICAL—	
The Treatment of Follicular Mange in the Dog with and without Vaccines. By R. H. SMYTHE, M.R.C.V.S.	694
ABSTRACTS AND REPORTS—	
Royal Veterinary College	696
Victoria Veterinary Benevolent Fund	705
REVIEWS	708
PERSONAL	709
TRANSLATIONS	710
NEW INSTRUMENTS	717
LETTERS AND COMMUNICATIONS, &c.	718
BOOKS AND PERIODICALS, &c., RECEIVED	718

Bailliere, Tindall & Cox

JUST PUBLISHED. Pp. xii. + 312, with 39 Illustrations.
PRICE **7s. 6d.** net.

VETERINARY TOXICOLOGY.

BY

G. D. LANDER, D.Sc., F.I.C.,
Professor of Chemistry and Toxicology, Royal Veterinary College, London.

RECENTLY PUBLISHED. THIRD EDITION. Pp. viii. + 528, with 161 Illustrations. PRICE **15s.** net.

FLEMING'S VETERINARY OBSTETRICS.

REVISED AND MODIFIED BY

J. F. CRAIG, M.A., M.R.C.V.S.,
Professor of Anatomy and Medicine in the Royal Veterinary College of Ireland, Dublin.

RECENTLY PUBLISHED. Pp. x. + 116. PRICE **3s. 6d.** net.

ECONOMICS OF FEEDING HORSES.

BY

HAROLD A. WOODRUFF, M.R.C.V.S.,
Professor of Veterinary Medicine and lately of Veterinary Hygiene and Dietetics in the Royal Veterinary College, London.

By G. MAYALL, M.R.C.V.S.,

COWS,
COWHOUSES AND MILK.
Pp. xii. + 102, with 16 Plates and 8 Illustrations in the text.
PRICE **2s. 6d.** net.

PIGS,
PIGSTIES AND PORK.
Pp. xiv. + 204, with 14 Plates and 55 Illustrations in the text.
PRICE **3s. 6d.** net.

SHEEP & GOATS.

Pp. x. + 126, with 35 Plates and 18 other Illustrations.
PRICE **3s. 6d.** net.

BAILLIERE, TINDALL & COX, 8, HENRIETTA STREET, Covent Garden, LONDON.

THE

VETERINARY JOURNAL

DECEMBER, 1912.

Editorials.

VETERINARY OFFICERS' FEES.—THE WORK OF THE NEWLY-CONSTITUTED NATIONAL VETERINARY ASSOCIATION.

The first Council Meeting of the National Veterinary Association under its new constitution has just been held in London, and is of the greatest importance in that the meeting is probably the first occasion on which the Association has gone beyond the scope of scientific matters to interest itself in the material welfare of the members of the profession. The main subject discussed was the indifferent payment of fees by county and municipal authorities to their veterinary inspectors. The enormous divergence in the scale of fees obtaining in various parts of the United Kingdom was discussed, and it was shown how absurdly inadequate they were in some districts, while they were quite satisfactory in others. We know full well that many authorities only require to be shown how unfair some of the fees are to amend the scale, and, as proof of this, Mr. Crowhurst, President of the South Eastern Veterinary Society, was able to instance the ready manner in which the Kent County Council met him and other representatives of the South Eastern Society. In their case the Council readily granted a very marked advance on previously existing scales of fees—even exceeding the most sanguine hopes of their inspectors.

The question is a very large one, so after discussion a small committee was appointed to inquire into the matter of fees as paid in various parts of Great Britain and Ireland, and to formulate a scheme for presentation to the Divisions of the Association, *i.e.*, to the various affiliated local societies. It is suggested that the scheme should be considered and criticized in relation to the fees already paid in the districts, and if the latter are found wanting, then steps should be taken by the local society to have their fees amended. If, on the other hand, the fees are already satisfactory, it is suggested that they should not be interfered with.

Mr. Crowhurst has been appointed Chairman of the Committee, and Mr. Theodore Toope, High Street, Dover, Secretary. The Committee will meet on December 11, and in order that a comprehensive view of the question may be taken, members of the profession who are in the position to afford information as to the fees obtaining in their district are asked to communicate the same to Mr. Toope.

Elsewhere in this issue of THE VETERINARY JOURNAL we reprint the scale of charges payable for the services of Government Veterinary Surgeons in Rhodesia. We commend that scale also to the consideration of the Committee.

This action on the part of the National is most praiseworthy, and we feel sure that the local societies will appreciate the assistance in the endeavour to obtain for their members better remuneration for their services.

ENTERTAINMENTS FOR THE VICTORIA VETERINARY BENEVOLENT FUND.

Too much prominence cannot be given to the good work which is being done by the above Fund and the urgent necessity, unfortunately, for its existence. The devices of its energetic and kind-hearted Secretary for raising money are inexhaustible, and if each of us would do one-twentieth of what he does in so worthy a cause there would be no need for the Treasurer to have to refuse to adequately assist all necessitous cases. As it is the funds have to be doled out in very small amounts, and the help which can be rendered is very small. The idea of devoting surplus funds, or even a portion of them, which are obtained by concerts, bowling matches, and other entertainments, at which members of our profession frequently

take a prominent pa.., to our particular charity is one which might be developed to some tangible purpose during the coming winter, and if it is adopted we shall be able to see a substantial increase in the funds for distribution. It is a crying need—let our members think of it—for charity should "begin at home."

General Articles.

THE USE OF "PITUITRIN" FOR UTERINE INERTIA IN DOGS AND CATS.

By G. H. LIVESEY, M.R.C.V.S.
Hove.

For a number of years I have found some of my most anxious and difficult cases among cases of delayed parturition. When a bitch is due to whelp, is in good health, and everything appears normal, it is very troublesome to find that when the labour pains have been well established nothing results. The pains get less and less, and eventually cease, and one is then called upon to make one's diagnosis as to the cause, and to give speedy relief. Sometimes labour so far advances that a pup enters the passage and may even be presenting when the mother ceases to make any further effort, or the pains may cease after one or more puppies have been successfully delivered. When all are born except one, and that one remains, it frequently dies *in utero*, and eventually causes the death of the mother, especially when the over-anxious owner resorts to syringing.

After some years, with a fairly extended experience of such cases, I have altered many of the ideas and opinions I used to hold on the subject, and practice has taught me that many of the cases which are ascribed to malpresentation or abnormal fœtuses are due to nothing of the kind, but to inertia of the womb. This is especially the case in toy breeds and in bulldogs. I was led to believe by teachers and breeders that the main cause of trouble during whelping in bull-bitches was due to the difficulty of getting the large head and shoulders of the pup to pass through the genital passage of the mother. This is true to a certain extent; not because of the size of the pup, but to the insufficient expulsive effort on the part of the mother. Of course, I refer

to ordinary cases where there has been no digital interference on the part of the owner.

I find the greatest difficulty in getting owners (especially if they be professional breeders) and so-called trained (?) nurses to let their whelping bitches alone. Quite a large number of my cases have only come into my hands as a result of previous interference with nature on the part of some meddling or over-anxious person. It is by no means uncommon in cases where labour has ceased to be called upon to remove the puppies in order to save the mother. If the bitch seems weak or failing I have known only too frequently that forceps have been passed into the womb and search made blindly for some part of a pup to pull down—anything done to "shift the pup that is causing all the obstruction." It is needless for me to say how foolish this is, or to point out how many bitches die from its effects.

I should like to say here, what may seem to some to be unnecessary, that the use of forceps is contra-indicated unless the pup is in the vagina, that is, is included in the bones of the pelvis. A proper hold can then be obtained, malpresentations recognized and corrected, and delivery effected. So long as the puppies are alive, delivery is seldom very difficult, but when they are dead the uterus seems to lose a great part of the stimulus to expel them. If there are no labour pains one's work is many times more difficult, as one gets no help from the mother. How to induce these pains, strengthen them, and prevent collapse has been a constant source of experiment with me, and I am now submitting the result of some of my work.

In mild cases where delivery is slow, the pains feeble but not absent, I have found that little danger exists if plenty of time is allowed and no drugs such as ergot employed. I am pre-supposing, of course, no malpresentation. When a puppy enters the passage gentle pressure with one finger from inside the vagina on the symphysis pubis nearly always induces a good effort on the part of the mother. In cases of malpresentation and dystocia caused by the chin or nose or leg getting caught under the brim of the pelvis there is seldom need to insert anything, not even a finger into the vagina. The fault can be corrected from the outside by manipulation through the thin abdominal walls, and even version can be performed. When the position is corrected the fœtus can be gently guided into the

pelvis, and delivery follows in due course provided labour pains have not ceased meantime, or the pup may be passed into the grasp of suitable forceps, and delivery effected in that way.

In those cases where labour has ceased I have found a valuable help in the use of pituitrin. During the last two years I have had twenty-three cases where I thought its use seemed to be indicated, and I propose to give a short account of some of the most notable.

The first case was a large bull-bitch, a well-known animal, and of considerable value. She was in charge of a woman who had been looking after breeding dogs for over forty years, and called herself experienced. This bitch was enormous in size and could hardly crawl about. The day she was due to whelp labour started well and continued for three or four hours, and then ceased. Twelve hours elapsed and no further pains occurred, but the bitch was sick and seemed very exhausted. I was then called to her in the middle of the night, and found her in this condition. Of course her attendant had made several examinations *per vaginam*, and she was liberally lubricated with vaseline and had been given brandy, and, I believe, some ergot—these things being in common practice among "the fancy." No pup was presenting nor entering the pelvis, so I did nothing, and ordered that nothing should be done, but the bitch let alone. Later, no pup having come down, I gave hypodermically 8 minims pituitrin behind the shoulders. Urine was passed freely within five minutes. In an hour the bitch was in great distress, moving about and panting, and labour recommenced. A pup could be felt entering the passage. During the ensuing twelve hours three large fat puppies were born without trouble, but only at long intervals. Then labour ceased again, and the bitch slept quietly. She seemed no smaller in size, and there were evidently several more pups. Being anxious she should keep up her strength I let her rest and fed her for another thirty-six hours. I then gave her 1 c.c. pituitrin with satisfactory results. She had another three puppies during the day, but was very distressed. Without any further injection she gave birth to two more puppies the morning following. The total length of time this bitch took to get rid of her pups from the onset of the first labour was five and a half days, and the result eight strong healthy puppies. She had no manual assistance, and was only fed at intervals on

milk or Savory and Moore's food. I believe all the puppies to be still alive and to have grown into good dogs. Now this was a case in which five years ago I would have said the only chance of saving the bitch was by Cæsarean section.

Another case, remarkable in its way, did not end so satisfactorily. In an outlying district I saw one night a small toy Pomeranian bitch weighing normally about 3¼ lbs. She was overdue by about three days, and this was to be her first litter. Labour had commenced the previous evening, and the pains had ceased after about two hours. When I saw her she was bright and lively, running about and feeding. No pup was presenting nor near the passage, so I postponed doing anything till next day. About 8 a.m. next morning she collapsed and was in a grave condition. I gave her hypodermically 8 minims pituitrin at once. Labour recommenced in twenty minutes and her general condition improved. A puppy began to descend over the brim of the pelvis, and I deemed it advisable to put on a pair of forceps to hasten its birth. The pup was dead when extracted, and two hours later the mother collapsed and died also. I was unable to find out the cause, either of her first collapse or her subsequent death. It was very remarkable, however, that in her collapsed and grave condition she should have responded so readily to the pituitrin.

An equally remarkable case which ended fatally was that of a Japanese to which I was called in consultation by another practitioner in a neighbouring district. The bitch was in a very weak condition, no pup was presenting, labour had ceased, and all the soft tissues were very greatly swollen owing to digital examination, syringing, and efforts to reach some part of the pup in order to extract it; 8 minims pituitrin was injected hypodermically and some vaseline injected into the vagina to lubricate the parts as these were rather dry and very inflamed. I was informed that labour recommenced with a good deal of distress, and a dead pup expelled the same day. This bitch died from septic absorption and shock.

In neither of these cases were there any ill-effects from the pituitrin so far as I could see; on the contrary it acted favourably in combating collapse, for it undoubtedly has the effect of stimulating the heart and raising the blood-pressure.

A case of a different type was that of a foxhound bitch with

her first litter. Two and a half days previously three good pups were born and then labour ceased. When I saw her, her temperature was 105° F., lactation in abeyance, her extremities cold, skin tense and inelastic, and her expression anxious. I thought her dying. She was given 3 gr. aspirin and 1 c.c. pituitrin. Labour recommenced about an hour afterwards, and one dead pup was born without my assistance. Next morning another c.c. of pituitrin was given, and another dead pup was born. Two hours later her temperature was found to be normal, lactation recommencing, and she was sent back to her puppies. I learned afterwards that this bitch before being brought to me had been treated in the usual way at the kennels, that is, liquid extract of ergot had been given without effect except that it had caused repeated vomiting.

There is no need for me to give details of the other twenty cases, as all were similar to the first case in the bull-bitch, but were not so prolonged, but I may as well mention two others in which pituitrin was successfully used. One was a case of post-partum hæmorrhage in a bitch which was stopped by a single injection of ½ c.c. pituitrin. The other a case of delayed parturition in a cat. This cat was 9 years old, had had kittens once or twice every year, and suffered from chronic endometritis, which I believed to be of tubercular origin. She had always given trouble at kittening time, and had nearly always at these times been under my care. Her last kittening occupied nearly six days, and the kittens only came away after repeated injections of 5 minims pituitrin. The after-birth in each case was nearly the size of the kitten and about an inch in thickness, and smelt abominally. I am quite sure this cat could not have tolerated the use of instruments, and, needless to say, all the kittens were dead.

To summarize the result of my observations I may say that I believe pituitrin to be a safe and valuable help in the class of cases I have mentioned. I have given as much as 3 c.c. in a day without apparent ill-effect. Its action commences quickly—about ten to twenty minutes after injection—and continues for a varying period, but generally for about one and a half hours. Repeated injections continue to induce labour efforts up to a certain point, which in my cases was variable, and after that little or no action was noticed except the continued secretion of

urine. But a remarkable point is that if ergot is then injected its action is very marked. It acts, so to speak, "on the top" of the pituitrin, and in a most decided manner. (I have only used ergotine citrate.) In no instance have I had the womb tetanized by using pituitrin in large doses (2 c.c.), and in no case did a puppy die during delivery. In those cases where the puppies were dead, death had occurred before my attendance. In no case could I find any interference with the secretion of milk, and those puppies that were born alive have all done as well as normally born puppies.

Pituitrin is a liquid extract of the infundibular portion of the pituitary gland: 1 c.c. equals about .2 gm. of the gland substance.

I believe I am the first to use it on animals in practice. I am therefore glad to have this opportunity of stating the result of two years' experimental work in the hope that others may find the same benefit in their practice that I have done.

[Mr. Livesey's experience closely coincides with that of Mr. J. Peddie, as recorded in THE VETERINARY JOURNAL for November.—EDS., V.J.]

STERILITY AND IMPOTENCE IN MALE DOMESTIC ANIMALS.*

BY THOMAS H. DALE, M.R.C.V.S.
Government Veterinary Officer, Potchefstroom.

THE disabilities—sterility and impotence—in domestic animals are the cause of an enormous annual loss to the stock-breeder and farmer; the loss to the individual is perhaps not great, but the aggregate amounts to a very large figure, as the condition is a very common one and, unless the animal is of value, attempt at treatment is seldom made. It is only within recent times that much attention has been paid to male sterility, even in human medicine, although there can be no doubt that the cases in which the male is at fault are much more numerous than is generally suspected.

Although the subject covers a very wide field, it was originally intended that this paper should include the disabilities of both sexes, but the amount of matter collected over a number of

* Read before the Transvaal Veterinary Medical Association at Pretoria.

years, when reviewed, threatened to exceed the limits of a single paper and made it necessary to deal on the present occasion with male incompetence only.

In a recent paper on "Sterility," by Mr. Wm. Brown, M.R.C.V.S., read before the members of the North of Scotland Veterinary Medical Society, and which appeared in the *Veterinary Record* of March 9, 1912, sterility is defined as "the incapacity on the part of an animal to reproduce its species." Broadly speaking, this may serve, though an animal may be fertile but impotent, and thus be unable to reproduce its kind. It therefore will be best to divide the subject, for although both sterility and impotence may exist together they can also exist separately; in fact, my experience, extending over a period of twenty years, shows that an impotent male is rarely sterile, and a sterile one seldom impotent. Accordingly it will perhaps be better to define a sterile male as one in which there is some defect in the seminal fluid, the essential fertilizing agent, and an impotent male as one in which there is some defect in the sexual apparatus. The defect is not necessarily of a physical nature, as impotence in a large majority of cases is of nervous origin, or due to a lack of cohesion between the nervous and physical attributes which only when acting simultaneously are able to produce the orgasm that concludes the act of copulation and causes proper ejaculation of the seminal fluid.

Sterility.

Although the percentage of cases of sterility in the male is not so great as in the opposite sex, the conditions which cause it are more diversified and are invariably more complex. Diagnosis is difficult, and the prognosis cannot be other than a tentative one, but in the following pages an attempt will be made to consider these conditions and also those which are the cause of impotence. Sterility may be permanent or temporary, and the first thing to be done is to make a physical or manual examination with a view to ascertaining whether there is any deficiency or abnormality of the essential organs. Of course, it goes without saying that a castrated animal is permanently sterile, as are also those in which the operation of vasectomy has been performed. One often comes across such cases in this country in Arabs and other imported horses of Eastern blood. In these

cases great care must be exercised, for as the testicles are present a cursory examination may lead one to conclude that these organs, at any rate, are not the cause of the sterility. Manipulation will, however, reveal the fact that they are abnormally large, that there is a thickening of the epididymis and spermatic cord, and that in the majority of cases there is no retraction when touched. In many of these cases desire is present, as it is in geldings in which the epididymis or a portion of it has been left when castrated, coitus is possible and often occurs, although the act is not completed; there is no orgasm and the small amount of fluid which is discharged consists of the secretions from the seminal vesicles, Cowper's glands, and the smaller mucous glands of the urethra. But in these cases microscopic examination will at once reveal the nature of the emission, and it is the only conclusive test.

The majority of cryptorchids are able to accomplish the sexual act with apparent satisfaction to themselves and many are fertile, but cases occur in which they are sterile, and it is a curious fact that many are fertile at two and three years old, but become sterile as they mature. Desire, however, is not diminished; in fact, in many cases it appears to be exaggerated.

Injuries involving both testicles or their ducts often cause permanent sterility, and several cases in bulls have come under my notice where fibroid changes have taken place after inflammation of the testicles following injury, usually caused by the animal attempting to jump a gate or fence. Any thickening of the epididymis should be looked on with suspicion, especially if both be involved, but a hasty judgment must not be formed; the aid of the microscope will be of service and will determine whether zoosperms are present or not.

One case has come under my notice in which a stallion that had worn a ring for several years with the object of preventing self abuse, proved to be sterile when an attempt to breed from it was made; but this may have been coincidence, or the animal may have been able to obtain partial erection and emissions of semen may have taken place, in which case function may have been lost owing to back pressure, or the semen may have escaped backward into the bladder, dribbling away afterwards or being voided with the urine.

Several cases of congenital azoospermia, or total absence of

spermatozoa from the seminal fluid, have come under my notice, both in thoroughbred horses and dogs. These cases are distinct from others in which the testicles are misplaced, confined in either the abdominal cavity or the inguinal canal, in which situation they may fail to develop or may atrophy, either from strangulation of their nutrient vessels or from pressure on the testicle itself. The cases to which I refer showed no apparent abnormality, and the external genitals were in each case well formed, and normal in situation, and in every case desire was present, the sexual act being performed in a perfectly normal manner. In fact, the only circumstance which pointed to the sterility was the absence of results, and in each case microscopic examination of the semen revealed the total absence of spermatozoa, a condition which, I regret to say, remained in spite of several attempts at treatment.

These cases, again, must not be confused with a condition which is quite common after biliary fever in horses, red-water and gall sickness in cattle, and biliary fever and distemper in dogs, and in which the azoospermia is acquired, usually of a temporary nature, and amenable to treatment.

Obesity has long been known as a cause of sterility in live-stock, but with proper management the condition is usually of a temporary nature, azoospermia is not usually found; the semen contains zoosperms in reduced quantity, the majority of these are non-motile or only feebly so, and have no progressive movement, although they may oscillate feebly. On the reduction of the excessive fatness, however, fertility is usually re-established, except in isolated instances, where possibly atrophy or degeneration of the testicle may have taken place.

Pus in Seminal Fluid.—The presence of pus in the seminal fluid may cause sterility of either a temporary or a permanent character. The zoosperms are usually dead or only slightly motile and do not progress; others, again, are deformed, and a mixed infection of micro-organisms is usually present. These cases are not common in the lower animals; in fact, compared with similar cases in man they are rare, gonorrhœa possibly accounting for the difference.

In the animals with which we have to deal, however, a urethritis is probably the primary lesion, with secondary infection to the seminal vesicles or the epididymis or both. There

may be no abnormality in the testicle itself, the spermatozoa being killed by the toxins liberated by the micro-organisms present. These vary in character; in a case which I have at present under treatment a streptococcus is possibly the destroying agent, but a bacillus and micrococci are also present. In this case the animal, which was only sterile at first, has gradually become impotent, imperfect erection is attained and ejaculation does not take place, the semen dribbling away after withdrawal. These cases are invariably unsatisfactory, as difficulty is experienced in locating the site of the trouble, and treatment must perforce be more or less of an empirical nature.

In another case, that of a pure-bred Shorthorn bull, there was a constant dribbling from the urethral opening, differing in this respect from the case of the stallion just quoted, in which there was a total absence of discharge. Manual examination failed to reveal any abnormality of the external genitals; the animal was healthy but had been unthrifty from a calf, and microscopic examination of the discharge, which very much resembled milk in consistence and colour, proved it to be pus with a mixed infection of micro-organisms, of which a staphylococcus was the most numerous. The seminal fluid also contained pus cells and organisms, and as the prognosis was unfavourable no attempt at treatment was made. *Post-mortem* examination revealed a condition that was interesting and justified the slaughter of the animal, as an enormous abscess was found, extending from the umbilicus to the urinary bladder, surrounding its neck and involving the seminal vesicles and other adjacent glands. The purulent contents had been discharged through a sinus-like opening into the urethra. It was then recalled by the attendant that soon after birth the calf had a septic navel which discharged for some weeks, afterwards healing externally, but that the animal had never been thrifty, although this was in no way attributed to the navel trouble. There can be no doubt that the urachus, becoming septic, persisted, and that as the pressure from the contained pus increased an outlet was found at the urethra. No line of treatment can be recommended in a case of this sort; it is sufficient if we are able to point out to the client the uselessness of attempting any. That sterility is ever due to sexual incompatability is denied by many —that is, incompatability without organic or functional derange-

ment of the sexual organs of either the male or the female; but that it exists those who have had large experience in the breeding of stock can well bear witness. An exceedingly potent stallion, leaving a high percentage of foals, fails to impregnate one particular mare that comes to him over and over again; she is then put to a stallion not specially noted for "stopping" his mares, and she holds to the first service. What is this, if not incompatability? Instances are common in which two animals are fertile when coupled with other mates, but together, for no apparent reason, they are sterile.

This almost disposes of the commoner causes of sterility pure and simple, but there are many causes of impotence which may make the animal for all practical purposes temporarily or even permanently sterile. Many of these, however, if intelligently approached will be found to be amenable to treatment.

Functional disorder and psychic aberration account for many of the cases with which we are called upon to deal, and although it is common to hear excuses for this condition in man, the main one perhaps being that he leads an essentially artificial life, it must not be forgotten that the modern domestic animal, be it thoroughbred stallion, Shorthorn or Ayrshire bull, Berkshire pig, or collie dog, leads an equally different existence from his progenitors. It is rare to find either sterility or impotence in common-bred stock or in wild animals, although it is fairly common in those which are well bred and nervously high-strung. It is highly probable that this has nothing to do with a long pedigree or consanguinity, but is due to the fact that the value of the animals and their forbears has lifted them into a sphere where everything is artificial—food, shelter, clothing, and even the seasons of sexual activity being controlled.

In this country and others that are cursed with diseases which leave an anæmia that takes weeks and even months to recover from, impotence is often a sequela, even after the patient has apparently regained the condition lost, or, as a result of careful and efficient nursing, has surpassed it. In the majority of these cases a favourable prognosis can be given with confidence. All that is required is an appropriate sexual stimulant, which need not be continued after the desired result is attained, for it is found that once potency is established there is no further trouble. Red-water and gall sickness in cattle, and biliary fever in horses

and dogs are the commonest causes of this condition in South Africa, but other cases are met with the causes of which are obscure. A stallion or a bull, for instance, is imported from Europe, stands the voyage well, and arrives in excellent condition, but when the animal is required for service, the importer or owner finds to his dismay that although a certain amount of desire is present, it is impotent; although attempt is made, the animal is unable to complete the act, and either penetration does not take place or there is no orgasm or ejaculation. In the majority of these cases, if the animal is segregated for a period from the other sex, recovery of power is attained spontaneously.

The cause of this temporary disability is obscure, although it is usual to ascribe it to climatic conditions or change of food, or both combined. Cases of a psychical nature are not uncommon, where a young stallion appears to be impotent, and where, in spite of much patience and perseverance on the part of the attendant the animal cannot be induced to attempt service. In some cases a young and nervous stallion is unfortunate enough to be put to a mare that is not ready for him, or to one that habitually kicks on the approach of the stallion; should he, in addition, receive a sharp rap or two, the remembrance of it may cause him to lose confidence in himself. In these cases a mare that takes the stallion kindly should be provided, and a good alcoholic stimulant administered about fifteen minutes before; this, however, must not be overdone, only sufficient must be given to produce a "devil-may-care" feeling, and it will be found in the majority of cases that this method will be successful. Aphrodisiacs or venereal stimulants are not indicated in these cases, and if a diffusible stimulant does not give the required confidence, bromide administered in the drinking water for two or three days should be tried, and it will often be found that confidence will be restored, an efficient service will be rendered, and that after the first successful attempt no further trouble is met with. Other instances of relative impotence which often gives trouble are those met with in old stallions that take a dislike to one particular mare or type of mare; for instance, a stallion will have nothing to do with a mare that is suckling a foal, in fact, cases occur where the stallion will savage and kick such a one. In these cases the difficulty may be overcome by exciting the horse with a mare for which he has shown prefer-

ence, and then substituting the one required to be served; but this method is not always successful, and in these cases much time will be saved if the stallion is allowed to serve another mare and to take advantage of this and artificially inseminate the rejected.

Phimosis in the bull and dog is not uncommon, especially in the latter, and may cause temporary impotence, but the treatment is indicated by the condition and presents no difficulty. Balanitis also, if neglected, occasionally results in lesions which require attention, but the treatment will be indicated by the extent of the lesions and requires no description in this paper.

In the treatment of sterility and impotence it is necessary, in addition to carefully considering the history of the case, to make a special manual examination not only of the external genitals but also per rectum, and it is essential that at least one service, or an attempt at it, should be witnessed. It commonly occurs that the owner or attendant states that a normal service is accomplished, but many cases exist where there is no orgasm, the semen, if it is discharged at all, dribbling away, most of it being lost after withdrawal. Although impregnation can take place under these circumstances provided the semen contains living spermatozoa it will be found in the majority of cases that the condition described is merely a symptom of more serious trouble. It cannot be too strongly pointed out that no examination is complete until an exhaustive microscopic examination has been made. Should proper ejaculation take place it may be necessary to collect a quantity of the discharged semen from the floor of the vagina. This is most easily accomplished with the aid of any one of the instruments sold for artificial insemination, but if this course is adopted, care must be taken to exclude from one's reckoning any organisms which may have been in the vagina before coitus. If, however, as often happens, there is a dribbling after withdrawal, it becomes an easy matter; but by whatever method the semen is obtained, examination should take place at once, everything being in readiness, and care being taken during cold weather, at any rate, to have the slides kept at about blood heat, as cold quickly destroys the vitality of the zoosperms and causes them to " nest " or run together in clumps, when a wrong diagnosis may result.

It will be unnecessary to describe healthy semen under the

microscope, but it will be as well to point out that in addition to enormous quantities of spermatozoa, which should be actively motile and show rapid progressive movement, other elements abound which have been mistaken for objects of pathogenic significance. Seminal cells may, for instance, be mistaken for pus corpuscles, seminal granules for micrococci, and epithelium is always found in healthy semen, and as it comes from any part or all parts of the urino-genital passages, varies considerably in form. Transparent crystals are also occasionally seen in perfectly healthy and normal semen. In the case of spermatozoa which have died after emission it will invariably be found that they die with a perfectly straight tail or at most only slightly curved, whilst those which are dead before emission are deformed or their tails are bent at a right angle or coiled on themselves. This is important when examining stained specimens, for although the condition of the zoosperm can be studied best immediately after emission, this is not always possible, and this difference in after-death appearance may materially assist in forming a diagnosis.

Having thoroughly examined the living spermatozoa the slide should be allowed to dry, and should then be fixed. This may be done either in the flame or with absolute alcohol, the latter possibly being preferable. It may then be stained by any of the ordinary methods, Loeffler's methylene-blue, Gram or Giemsa giving good results. The first and last are easy to manipulate and Giemsa possibly gives the best all-round results in the hands of those not expert in bacteriological manipulative methods. Examination with an oil immersion lens at once reveals the presence or absence of any of the pus-forming organisms. Should there be any present, the condition of the zoosperms at the first examination may give some clue to the gland or portion of the urino-genital tract which is infected and involved. If they are dead or malformed it is highly probable that the aseptic area is either the vesiculæ seminales, the prostate or the deep-seated urethra. The presence of dead or deformed zoosperms without the presence of pus-forming organisms may usually be interpreted to mean that some morbid change has taken place in the testicle itself, and further manual examination should be made with a view to ascertaining whether atrophy of these organs or one of them is not taking place. It will be un-

necessary to point out that if one testicle is so badly affected that no spermatozoa are thrown off, there will be a very considerable decrease in the relative numbers of spermatozoa found in the semen, owing to the fact that the secretions from the subsidiary glands may not be affected and that therefore the quantity of semen ejaculated may appear approximately normal. As, however, the secretions from the prostate, the seminal vesicles and possibly other glands all assist in forming a suitable medium for the effective conveyance of the spermatozoa, it is conceivable that any condition which may have altered the character or consistence of any one of these secretions might also vitally affect the others.

From the foregoing remarks it will be seen that the only conclusive test of fertility is the presence of active healthy zoosperms in the seminal fluid, which must be demonstrated by the microscope. If these are present, impotence, however marked or from whatever cause, must be attacked with every hope that the sexual power will be restored.

To start with, the general condition of the animal must be taken into account. The majority of stud animals are much too fat for the purpose of begetting healthy stock, and are more fitted for the show-pen than the stud. In all cases of sterility or impotence, except in those cases resulting from debility or as a sequel to some disease, regular moderate exercise must be prescribed and the food ration regulated. Small doses of mag. sulph. should be prescribed in the drinking water morning and evening; one ounce will be sufficient for a stallion, with double the quantity for bulls, other drugs being included in the treatment suitable to individual cases. The fact, however, must not be overlooked that in many cases of impotence no drugs are required, especially in this country, where the management of highly-bred stock is little understood. In many of these cases advice as to general management, feeding, &c., will be all that is required.

There are many drugs, however, which can be used to advantage in the many diverse conditions which are the cause of impotence: aperients where obesity is the cause; stimulants, both diffusible and venereal, where indicated; sedatives, again, have their uses; and, of course, tonics where the general system requires bracing up. In addition, there are several so-called

aphrodisiacs of more or less utility which are reputed to have direct and special influence on the organs of generation themselves. The uses to which some of these drugs may be put have already been indicated in this paper, and it will be unnecessary to mention them further. Phosphorus, strychnine, and iron, especially the first two, have been largely used in the past as aphrodisiacs, but it is extremely questionable whether they have any specific action on the genital organs themselves or the centre which controls sexual desire. That they are suitable tonics, either separately or in combination, where there is a lack of general vigour, goes without saying, and in these cases their administration cannot be otherwise than of benefit. Cantharides is one of the oldest reputed aphrodisiacs, but it is not an aphrodisiac in the true sense of the word, its action being reflex, and mainly depending on its irritant action on the urino-genital tract. This action is, however, uncertain and seldom produced unless the drug is exhibited in dangerously large doses.

Damiana is reputed to be a nerve tonic of great value in sexual debility and functional impotence, and is usually dispensed in conjunction with phosphorus, strychnine, and other tonics. That it is of very great assistance in many instances there is no doubt; but its action appears to be uncertain, or it may be that some of the cases in which it was used were unsuitable, for it must be remembered that once a drug gets a reputation as an aphrodisiac it is administered to every case of impotence and sterility, whether male or female, without inquiring as to the cause of the condition. Mr. Reginald Bourlay, the poultry expert for the Transvaal Province, informs me that he has used this drug in connection with poultry for the past three years and has also experimented with it in one or two other directions. It frequently occurs that a male bird, during the earlier part of the breeding season, does not pay sufficient attention to his hens, with the result that many of the eggs are unfertile, and in such cases Mr. Bourlay has never known damiana to fail during the time he has used it. Doses of 1 gr., given at intervals of two days for a week or ten days, have always put matters right, and the cocks having once started working continue to fill their eggs satisfactorily. He has also administered the drug to turkeys with equally satisfactory results, but in the case of geese there was no response, though possibly this may not have been due to the inefficacy of the drug, but rather to the fact that the

females were too fat, which would to a great extent account for the sterility. With ostriches also the results were equally unsatisfactory, though 5-gr. doses were given; but, as in the case of the geese, he believes that the females were too fat. Mr. Bourlay also, on one occasion, gave a dog which was slow in serving 2 gr. of damiana; the effect of the drug is described as marvellous, for within a few hours' time he was rampant and during the whole of the following day was endeavouring to line the bitch every few minutes, though naturally his efforts were only occasionally successful.

Another agent is yohimbine, also on the market as aphrodine. It is an alkaloid obtained from the bark of the yohimbehe tree (*Coryanthe yohimbi*), growing in the Cameroons and belonging to the natural order Rubiaceæ. The results obtained with it by numerous practitioners, both in human and veterinary medicine, are diverse and almost lead one to think that the samples experimented with were not reliable, or that the active principle had been lost or changed, or requires standardizing. The writer has had good results, and experience of the drug shows it to be a powerful aphrodisiac, when properly regulated doses are given. It is said to stimulate the erection centre in the spinal cord, and in the human subject it causes marked congestion of the genital organs, especially the testes and penis. Large doses are not required, as, like many other alkaloids when pushed, toxic symptoms supervene quite different to those exhibited when administered in medicinal doses. Although it is advertised as a remedy for sterility, it is obvious that there are many cases of sterility in which it can be of no use whatever, and as its action is to stimulate the erection centre only it is certain that its use, although a very helpful one, can be as a remedy in functional impotence only. Especially useful has it been found in the writer's experience in awakening the sexual powers and appetite in apparently healthy animals that have recovered from some serious illness, but which have little or no desire, and even if they have are unable to accomplish the sexual act. As an instance, a valuable imported Shorthorn bull passed through an exceptionally severe attack of red-water, followed at the usual interval by gall sickness, during which he was kept alive on fresh blood administered *per os*, with transfusion into the jugular at intervals. After hanging between life and death for weeks, the animal made a good recovery, and

ultimately got into show condition. Unfortunately, although a certain amount of desire was present, and feeble attempts at service were made, the animal was unable to complete the act. Ordinary tonics were administered and the animal was turned out on to the veldt to graze, but the desired effect was not obtained. Eighteen months passed from the onset of the first illness until yohimbine was prescribed, when after ten days' treatment the animal commenced to cover and no further treatment was required. It is also of interest to record that the cow "held" to the first service, which is remarkable after such a long period of continence. Finlay Dun, quoting Holterbach, cites a similar case, and many others can be found recorded in the pages of the different journals, more than sufficient to counteract adverse reports which may have been occasioned either by the unsuitability of the case in which it was used, to an inert sample of the drug, or other similar cause.

Spermin and didymin, both preparations of the testes, I have not prescribed or used. It is possible that these extracts may be of value, for it is now known that the testes, in addition to producing the zoosperm, also elaborate a secretion which is reabsorbed into the blood-stream and which has a very important bearing on metabolism. Other substances, drugs, alkaloids and extracts have been used in human practice, several with the object of combating conditions which do not obtain in our patients and a consideration of them would be of no value.

This is a record only of the commoner causes of sterility and impotence in the lower animals, or at any rate of those which man has found it convenient and possible to domesticate. There are other and rarer cases which one may come across and which may be styled accidental, as, for instance, a blow on the head which may cause either temporary or permanent impotence. Such cases, from their rarity, are negligible. There is often no history; every case has to be dealt with on its merits, on the symptoms which our own powers of observation discover, but there is this to be said, that in perhaps no other disability with which we have to deal will we meet with greater appreciation if successful, for there is nothing more discouraging to the stock-breeder if he be a beginner, or annoying if of established reputation, than to possess a good animal, one possibly good enough to win in the best of company, and to find that it is incapable of passing on those good qualities which made it pre-eminent.

A *RÉSUMÉ* OF OUR KNOWLEDGE ON THE OCCURRENCE OF *GNATHOSTOMUM SPINIGERUM* IN INDIA AND ITS RELATION TO A SIMILAR PARASITE FOUND IN MAN.

By S. N. MITTER.

Professor of Pathology, Bengal Veterinary College, India.

(From the Raymond Research Laboratory.)

The rare occurrence of this parasite in India and the absence of any detailed description of its structure and the lesions it produces led me to place on record this short note, which may be of interest. I believe that specimens of this entozoon are also rare in the museums of Europe.

While making the *post-mortem* examination of a domestic cat sent to this laboratory under suspicion of rabies, the stomach was found to be congested and to contain a hard tumour of the size of a marble. In the tumour there was a small sinus which led to a cavity. A worm was protruding through the hole and when the tumour was divided another worm was found in the cavity. Seen under a dissecting microscope, the heads are armed with a peculiar arrangement of spines, which makes a boring combination resembling a drill or a saw.

We were unable to classify the specimens and sent them to Professor Neumann for his assistance. The following extracts from his reply will be of interest:—

"The nematodes you found in the stomach of the domestic cat are the *Gnathostomum spinigerum* (Owen), as far as I can judge from the somewhat shrivelled condition of the specimens. This species has already been found in the stomach of several wild animals of the cat tribe, *Felis catus, F. concolor, F. tigris;* I am not aware that it has been noted in the domestic cat hitherto. On the other hand, Lewis found in a pariah dog in Calcutta a worm which Cobbold did not hesitate to class as *G. spinigerum;* but Lewis only found a male specimen inhabiting a tumour of the size of a chestnut with a cavity communicating by a narrow opening with the stomach of the host. This gnathostomum is only rarely seen."

During an autopsy of a fox-terrior dog born and bred in this country, two gnathostoma (male and female) were found free in the peritoneal sac. On opening the stomach a hard

tumour with a sinus in the centre was noticed from which a third gnathostomum protruded into the cavity of the stomach. The sinus extended through the stomach to the peritoneal cavity. From the peritoneal end of the sinus a fourth gnathostomum was protruding.

The carcase of a leopard (*F. pardus*) was received from the Calcutta Zoological Garden for *post-mortem* examination and report. The Superintendent informed us that the animal had been ailing for two or three days and had lost its appetite. Two other leopards in the same garden had died within two or three days with similar symptoms. These animals were not, however, sent for autopsy.

On opening the stomach two suppurating tumours of the size of large walnuts discharging semi-liquid pus were found in the mucous membrane. In the contents of the stomach, chiefly mucus, were found several free gnathostoma, and eighteen gnathostoma were found in the tumours. The peritoneal sac also contained several gnathostoma which had escaped, no doubt, from the stomach through the sinus leading to the peritoneum. Death was due to gastritis and to perforation of the stomach wall caused by these parasites.

The male parasite measures about 5 mm. in length, .5 mm. in breadth. The female measures 9 mm. in length, 1 mm. in breadth.

In the fresh state the parasite is of a rosy-red colour, mottled with white and black patches; it turns dull white when preserved in spirit or formalin. It consists of four parts—a well-marked bulbous cephalic protrusion or head, a constricted neck, a body and a tail. The body, after leaving the neck, becomes dilated and forms a ventral bend and maintains that dimension throughout the whole length, except at the tail, which is rather narrower and blunt-pointed.

The cuticle of the bulb or head is covered by eight rows of chitinous leaves, which have their posterior ends notched into small spines. The anterior half of the body is thickly covered with similar tridented cuticular laminæ of different shapes. In the middle region the leaves are simple and conical. The cuticle of the posterior half is smooth and devoid of any appendages. The oral aperture is simple and is guarded by two fleshy leaves, each containing two papillæ. The œsophagus is highly de-

veloped and expanded at its distal extremity. This is followed by intestines of a uniform calibre. Around the anterior half of the œsophagus are found four excretory glands. They are elongated, cylindrical and rounded at their distal ends. Though situated between the œsophagus and the body cavity, they appeared to have no particular attachment with them. The ducts of each pair of glands join and form a common duct which pierce the adjacent lips on each side. The tail of the male parasite is spiral-shaped and garnished with eight genital papillæ surrounding the cloaca. The caudal bursa is absent. There are two chitinous spicules of different lengths with a ventral bend and blunt distal ends; the longer one measures 1 mm. and the smaller .4 mm. The tail of the female is straight and trilobed, at the base of which is the anus. The ovaries are double. The vulva is situated behind the middle of the body. The ova are elliptical in shape and covered by a thin capsule.

The general information given in Profesor Neumann's book about these worms is as follows:—

"He observes that this family is established by only one genus '*Gnathostomum* (Owen)' or '*Chiercanthus* (Dies)' represented by polymyarian nematodes, the cylindrical body of which is covered in front by chitinous leaves or plates that have their posterior border notched into spinules; in the middle region the leaves are simple and conical. The posterior part of the body is unarmed. Railliet, quoted by Neumann, describes these parasites as having a distinct and globular head studded with simple spines; a mouth with two lips, one dorsal, the other ventral. Males have a spiral tail garnished with papillæ below. Females have straight tails, ovary double, vulva posterior; oviparous. The *Gnathostomes* are parasites of the stomach either of the pig, the dog, and the wild cat."

As it appears to be highly probable that the *G. spinigerum* (Owen) in lower animals and the *G. siamense* (Le Levenson) in man are identical, I shall endeavour to consider the latter parasite which is found in the subcutaneous tissue of man. A female parasite of this nematode was obtained from a young Siamese woman by Dr. Duentzer in Bangkok, and described by Dr. Levensen in 1899. The woman suffered from a livid and painful enlargement of breasts, which was followed by the formation of small bean-shaped tumours under the skin. From one of the nodules this parasite *G. siamense* protruded.

As the description of the parasite was based on a single female specimen, it was unfortunately lacking in many details; but in 1909 a male specimen was presented by Dr. A. F. Kerr, of Siam, to the London School of Tropical Medicine, and was fully studied and recorded by Dr. Robert T. Leiper in the *Journal of Parasitology*. On referring to this and other literature on the subject, I find that the anatomy of the *G. spinigerum* and the *G. siamense* are practically identical.

CONDITIONS UNDER WHICH GOVERNMENT VETERINARY SURGEONS' SERVICES ARE AVAILABLE TO THE PUBLIC IN RHODESIA.

I. Since April 1, 1909, the services of Government Veterinary Surgeons have been available to the public, free of charge, for the following purposes only:—

(1) Attending and giving professional advice in connection with the following diseases, *viz.*: Anthrax, contagious abortion, East Coast fever, epizootic lymphangitis, foot-and-mouth disease, farcy, foot-rot, heartwater, glanders, intestinal parasites amongst sheep and goats, liver disease, lung-sickness, osteo porosis, malarial catarrhal fever (blue tongue), rabies, redwater, rinderpest, scabies, sponziekte (quarter evil), swine fever, and any other diseases which may in future be scheduled in terms of section 3 sub-section 18 of the "Animals Diseases Consolidation Ordinance, 1906." Attending to cases of disease amongst live stock which, though not of a contagious or infectious character, may be of general public importance.

(2) Applying tests in regard to glanders, tuberculosis, or any other disease against the introducton or spread of which tests are applied under regulations.

(3) Inoculations against the following diseases: Horse-sickness, lung-sickness, anthrax, quarter evil, redwater, malarial catarrhal fever (blue tongue). A fee to cover the cost of serum and virus will be charged.

II. The following charges shall be made and payable for services rendered by the Government Veterinary Surgeons in other cases, *viz*:—

(1) For every professional visit within three miles of his office or residence, 5s.

(2) For every professional visit beyond such distance, 10s. 6d., plus an additional charge of 2s. 6d. per hour whilst engaged in such visits, or £2 2s. a day of 24 hours.

(3) For advice given at the Veterinary Surgeon's office, for each animal, per visit, 2s. 6d.

(4) The following to be charged in addition to visiting fees: (*a*) for every examination as to soundness, each, £1 1s.; (*b*) for castration, horses, each, £1 1s.; (*c*) for castration, bulls, each, 5s.; (*d*) for castration, donkeys, each, 10s. 6d.; (*e*) for parturition cases, mares, each, £2 2s.; (*f*) for parturition cases, cows, each, £1 1s.; (*g*) for other operation, according to nature, from 5s. to £2 2s.

III. Double the above fees will be payable for services rendered on Sundays, public holidays, and between the hours of 7 p.m. and 7 a.m.

IV. Applicants for the services of Government veterinary surgeons must at their own cost provide the necessary transport for the conveyance of these officers from, and back to, their residence or nearest railway station.

The services of Government veterinary surgeons will only be available for private work with the consent of such officers, and when such work does not interfere with their official duties, or when the services of a private practitioner are not available.

All fees collected in terms of these regulations are payable to the Treasury through the local receiver of revenue.

FOOT-AND-MOUTH DISEASE.

Restrictions Withdrawn.

As no outbreak of foot-and-mouth disease has been confirmed in Great Britain since October 8, the Board of Agriculture have now withdrawn all the remaining restrictions on the movement of animals imposed by them in connection with the outbreaks confirmed prior to and on that date.

Clinical Articles.

A DENTIGEROUS CYST.

By A. J. CATTELL, M.R.C.V.S.
Brecon.

The patient was a cart colt, about 18 months old, with a swelling at the base of the left ear and a continuous discharge from the edge of the cartilage.

The swelling was about the size of a hen's egg and the discharge of a thick, white, mucoid nature coming from a small hole about 3 in. away from the swelling.

The colt was cast and upon opening the swelling a small cupful of thick secretion escaped, and at the bottom of the cyst I found a molar tooth firmly fixed to the petrous temporal regions.

It took a considerable time to dissect out and unfortunately the fangs broke off and some of it was left behind.

The lining membrane of the cyst was of a leathery nature, smooth and of a bluish tinge. This was dissected away and there was no further trouble beyond that of ordinary wound treatment.

IS CRIB-BITING HEREDITARY?

By W. LOTHIAN, M.R.C.V.S.
Duns, N.B.

In the article on "Crib-biting and Wind-sucking," by Lieut.-Colonel J. Moore, in the November issue of The Veterinary Journal, the author asks the question, "Does heredity play a part in its cause?"

Well, I have very strong proof that it does.

The hackney stallion, Gold-Digger, was a bad crib-biter. He travelled this district for a good few years, and I knew a number of his progeny that were crib-biters, and out of mares which were not crib-biters.

One very strong case for the heredity cause is furnished by the following:—

A pony mare, a crib-biter, had ten foals, nine of which were to the Gold-Digger and one to another stallion which was not a crib-biter. All the nine foals got by Gold-Digger turned crib-biters; some did it before being broken in, and one was 5 years old before she started. The one got by the other stallion, although now 6 or 7 years old, is not a crib-biter. I am indebted to Mr. Weir, of Langton Mill, Duns, the breeder, for particulars of the above case, although all of them that I knew had the fault.

There may be other causes, but I think the above proves conclusively that heredity plays a part in cause. For my own part I have no doubt horses swallow wind in crib-biting. I once owned a driving horse that if put into a stable without a neck strap being put on could blow himself out to a great extent in a very short time.

BACTERIAL NECROSIS OF THE LUNGS OF A HORSE.

By GEO. WOOLDRIDGE, F.R.C.V.S.
Professor in the Royal Veterinary College, London.

I am indebted to Mr. F. Macdonald, M.R.C.V.S., for the lungs of a horse which had exhibited the following symptoms:—

The horse, a black van gelding, was observed to have a small abscess on the coronet of one hind foot. The lesion appeared to be a comparatively simple thing, but it was acutely painful, and the animal was blowing somewhat. In the course of the next day or two other small abscesses developed in the vicinity of the pastern and fetlock, and the horse became seriously ill. Pulmonary symptoms supervened, with respiratory distress, and death occurred eight days after the first abscess was noticed.

On examining the lungs, they were found to be affected with a very large number of greyish nodules or lumps with a firm consistence, and varying from the size of a hazel nut to a tangerine orange. They were most numerous at the apices and along the lower margins, and in these positions they stood out like small tumours above the surrounding collapsed lung tissue. At the bases of the lungs the lesions were larger. On cutting the lung tissue was somewhat œdematous. The cut lesions were yellowish-

white in colour and slightly moist, but no abscess cavities were present. On microscopic examination of a scraping from the cut surface, the bacillus of necrosis was readily demonstrated.

What is so remarkable about some of these cases of pulmonary necrosis is the apparently trivial nature of the original primary lesion. The condition, however, is not very common in my experience, though Sir John McFadyean has seen a number of cases all secondary to foot lesions. In cattle, secondary lesions are more frequently met with in the liver.

Canine Clinical.

THE TREATMENT OF FOLLICULAR MANGE IN THE DOG WITH AND WITHOUT VACCINES.

By R. H. SMYTHE, M.R.C.V.S.
Redruth.

I HEREWITH append the results of the treatment of six recent cases of follicular mange in the dog—three with vaccines, and three without. The results of the vaccinated cases are not nearly so satisfactory as I had been led to hope by some of my previous cases, thus coinciding with the predictions of Professor Wooldridge, who kindly provided me with one of the cases from which vaccine was prepared.

Case No. 1 was a black pug, with pustules very marked, and of some standing. I treated him without vaccines, but by the method I described in the "Parasitology"* I published a couple of years ago. The treatment, though drastic, was quite successful, and the dog completely recovered in three weeks. As the owner was away, I kept the dog myself for a considerable time without any reappearance of the disease. About a month after sending him home he was brought back as bad as ever, probably reinfected, and I thereupon destroyed him.

Case No. 2 was a pedigree, much inbred bloodhound puppy, three months old, and absolutely the worst case of the pustular

* Published by Messrs. Bailliere, Tindall and Cox, London.

type I ever saw. I prepared a culture from the pustules (an almost pure infection by *S. albus*), and from this a small quantity of vaccine. I commenced treatment with a dose of 5,000,000 dead bacteria, and increased by 5,000,000 every fifth day, together with a hypodermic injection of nuclein daily.

After four doses the pustules had disappeared and also my vaccine, and I could get no more pus to continue the treatment. I then dressed the dog with ordinary mange dressing, and he appeared all right for a week or two, when he developed a fresh crop of pustules. Vaccine treatment was recommenced, with results as before. Unfortunately the dog then showed symptoms of distemper, and ultimately broncho-pneumonia, from which he died.

Case No. 3 was the fox-terrier puppy Professor Wooldridge sent me. About a week after his arrival he developed a few pustules, from which I prepared a vaccine. After three doses the pustules disappeared, and although I kept him away from my kennels, with another case (No. 4), he got quite all right, although quite exposed to infection.

He became quite fat and lively, and I was very surprised one morning to find him, some weeks later, after he had been removed from isolation, dead in his kennel. I was, unfortunately, unable to make any *post-mortem* examination, but have a very firm suspicion as to the cause of his death from other sources.

Case No. 4 was another fox-terrier puppy with marked pustules, badly affected. I used vaccine prepared from No. 3 without any results. I then tried a polyvalent vaccine from an American firm without success.

After this I tried ordinary skin-dressings, but he became so weak that I eventually destroyed him.

Case No. 5.—A Manchester terrier bitch, very ancient, with papules on hind feet and abdomen. As the lady-owner was an invalid I gave a mild calamine lotion, with a little liq. picis carb. Curiously, she recovered within a fortnight without any further treatment.

I found the parasite quite easily in this case.

Case No. 6.—A mongrel terrier with a few pustules on the head.

Painted daily with iodine and hydrg. biniodid. in alcohol. Completely recovered.

Abstracts and Reports.

ROYAL VETERINARY COLLEGE.

Inaugural Address by Major-General F. Smith.

When I was honoured with the invitation to deliver the introductory address at this School, my chief anxiety was the selection of a subject suitable not only to students of standing in the College, but also to those who have just joined, and for whom primarily the introductory lecture of days gone by was mainly intended.

The usual opening lecture contains the collective wisdom of observing and earnest men, teachers, and laymen, who endeavour to present the newly-joined student with the cream of their experience. If all the introductory lectures were published which have been delivered in this Institution, they would fill many volumes, and represent a veritable store-house of ripe experience, sound judgment, and oratorical effort. It would be interesting to know how many students have availed themselves of the advice so given. The fact is, we value nothing which is easily obtained, and of all gifts the young value good advice more lightly than anything else. I venture to think that probably not more than one student a year in this School has been influenced by the wisdom annually poured forth in October. We all have to learn from the beginning in everything, our knowledge starts from the simplest elementary cell of experience, and by no process can the period of multiplication and differentiation of the cell be hastened, and no other than those provided by the body can be of any use to it. I do not say that in intelligence and wisdom all men are equal or equally endowed. There are many who learn little or nothing from experience, and who go through life with an astonishingly small amount of wisdom. It is evident to all who have lived long enough to observe, that every man must fill up that portion of his brain devoted to knowledge with the facts of his own laborious accumulations, and that those belonging to other people are of little or no use to him. Holding these views, I have proposed to myself to make a departure in the introductory address, and instead of telling you how to become good and industrious students, I intend to tell you how to collect and utilize the information which will make you good and skilful practitioners. There is very little intuitive knowledge in the world, but there is an intuitive capacity for acquiring knowledge and an intuitive skill in utilizing it. Speaking generally, all knowledge is the outcome of experience, and the two tutors of experience are observation and experiment. The application of experience in order to elicit truth is the quality known as judgment. I intend this afternoon to deal with the two qualities, observation and judgment, in the construction of the veterinary practitioner. It must be evident to you that in clinical work, especially with

dumb patients, you cannot gain knowledge excepting by observation; and in order to become skilful all your efforts must be devoted to observing your patients. If you could learn about disease from books there would be very little reason for the existence of an institution of the kind we are in to-day. No book, however, will present an exact picture of the case you are searching for, for the good reason that no two cases of the same disease are ever exactly alike. I may illustrate this all-important fact by reminding you of the doctrine of combinations and permutations, or the art which teaches the number of possible ways in which a given number of things may be mixed. One of the simplest examples I can select to convey this lesson is to ask you to consider the number of possible ways in which the names of the seven days of the week can be arranged. It can be shown mathematically that the number of possible orders, including the existing one, is no less than 5,040. In the example selected, as few as seven things can be so mixed as to be capable of arrangement in 5,040 different ways, so that if we chose we could for 5,040 consecutive weeks have a fresh order in which the days should follow each other. Accordingly, if we started with the existing order it would be ninety-seven years, less four weeks, before it would again be reached. Now it seems more than probable that the number of possible ways in which the factors which make up disease may be mixed accounts for the fact that no two cases of the same trouble are exactly alike. We do not know what these factors are, they may be purely chemical changes, they may be partly chemical and partly tissue, they may be wholly tissue. We know nothing of the subject at present, so that in speaking of chemical and tissue changes I am only employing convenient terms to express my thoughts. Whatever the changes occurring in the body may be, which admit of its passing from a physiological into a pathological condition, it appears certain that they are capable, like the days of the week, of a large number of possible arrangements, which explains why every case of the same disease is a problem in itself. This cannot be too seriously committed to mind if we are to appreciate the surprises which await us in practice. It is the inability of the public to learn this lesson which supports the race of quacks, of cure-all remedies, and the publication of the *Family Prescriber* and the *Stable Companion*. In every observation one or more of the senses of sight, hearing, touch, smell, and occasionally taste are employed. All these senses are not of equal importance in clinical work, yet none of them may be neglected if we are to keep our powers of observation at the highest level. There are many varieties of observation, and probably no one man possesses them all equally developed. There are some people who never forget a face, the mental picture formed is ineradicable; some never forget horses they have once seen, others can never remember them. There are people so unobservant as to locality that they do not recognize a street they have seen before, and others who never fail to remember one along which they have once passed. Similarly

there are men who can see clinical features and differences when they are pointed out, but fail to find them for themselves; yet the recognition of these differences in practice is of the utmost moment, and there are even commoner features in connection with the sick or their surroundings which some utterly fail to notice. I intend to present to you to-day as the basis of my remarks, a part of the satirical story entitled "Zadig," written by Voltaire in 1747. It illustrates the power of observation, and, though it is doubtful whether he ever intended it to be taken seriously, you will recognize, when I have related it to you, the framework of the far better known Sherlock Holmes.

"Zadig was a young man who sought for happiness in the study of nature. He believed there were no delights equal to those of the philosopher, who reads in this great book the truths which are always set before him. He retired to a country-house on the banks of the Euphrates, in the vicinity of Babylon. Here his especial study was the properties of animals and plants, and he soon acquired a sagacity that showed him a thousand differencies in these where other men saw nothing but uniformity. One day when walking near a wood he met several of the palace attendants running hither and thither like men bewildered, and searching for some precious object. 'Young man,' said one of them, 'have you seen the queen's dog?' 'It is a very small spaniel,' replied Zadig, 'it is not long since she had a litter of puppies, she is lame in the left fore limb, and her ears are very long.' 'You have seen her then?' said the attendant. 'No,' answered Zadig; 'I have never seen her.' At this moment the finest horse in the king's stable broke away from his groom on the plains of Babylon. The Grand Huntsman and other officers ran after him, and, passing Zadig, asked him if he had seen the king's horse pass that way. Zadig replied, 'It is the horse which gallops best, he has small feet, and is 15 hands high, his tail is 3½ ft. long, the bosses on his bit are of gold, and his shoes are of silver.' 'Which road did he take? Where is he?' asked the Grand Huntsman. 'I have never seen him,' answered Zadig, 'and I have never heard anyone speak of him.' The palace officials had no doubt that Zadig had stolen the dog and horse, so he was arrested and brought before the Court, which condemned him to a flogging and transportation for life. Scarcely had the judge pronounced sentence than the horse and dog were found. The judges were accordingly under the disagreeable necessity of amending their judgment, and consequently fined him heavily for having said that he had not seen what he must obviously have seen. He was allowed, however, to plead his cause before the Court, which he did in the following terms: 'Inasmuch as it is permitted me to speak before this august assembly, I swear to you that I have never seen the queen's dog nor the horse of the king. Hear all that happened. I was walking towards the little wood, where later on I met the palace officials, and saw on the sand the footprints of an animal. I easily decided that they were those of a little dog. Long and faintly marked furrows, imprinted where the sand was slightly

raised between the footprints, told me that it was a bitch whose teats were drooping, and that consequently she must have given birth to young ones only a few days before. Other marks of a different character showing that the surface of the sand had been constantly grazed on either side of the fore paws, informed me that she had very long ears; and as I observed that the sand was always less deeply indented by one paw than by the other, I gathered that the dog was a little lame. With respect to the horse of the king, you must know that as I was walking along the road in the wood I perceived the imprints of a horse's shoes all at equal distance. There, I said to myself, went a horse with a faultless gallop. The dust upon the trees, where the width of the road was not more than 7 ft., was here and there rubbed on both sides 3½ ft. away from the middle of the road. This horse, said I, has a tail 3½ ft. long, which by its movements from right to left has whisked away the dust. I saw, where the trees formed a canopy 5 ft. above the ground, that leaves had lately fallen from the boughs, and I concluded that the horse had touched them, and was therefore 15 hands in height. As to his bit, he had rubbed its bosses against a stone. Lastly, I inferred from the marks that his shoes left upon the stones on the ground that he was shod with silver.'"

I have ventured to give you a detailed transcript of this being of Voltaire's imagination, inasmuch as the penetration and close observation of Zadig should be imitated by you if you are anxious to succeed in life. It is perfectly possible by acute observation to be able by his methods to learn for yourself what your patient can never tell you, what the attendant may deliberately misrepresent to you, and even the owner may lend himself to measures opposed to his own interests. The observant man by the employment of his senses is rendered independent of outside assistance. Though Voltaire's story, in the above connection, stops at the point mentioned, I propose to take the liberty of retaining the creation of Zadig, transforming him into a veterinary surgeon, and continuing the story, which might run somewhat as follows:—

"The King of Babylon was so impressed on hearing of the subtle discernment of Zadig that he determined to test his powers by directing him to inspect his stables and horses. He had long been dissatisfied with their management and care, and this was an opportunity not to be lost. He, however, directed that no help of any kind should be given him, and Zadig, who readily accepted what appeared to him to be a challenge, undertook to ask no questions, and to base his opinion on his own observations. One by one the horses were seen, some in the stable, others outside for further observation, but in no case was a word spoken. The king then requested a report to be made him. Zadig was ushered into the royal presence and spoke in the following terms:—

"'The stables of your Majesty are not conducted on a modern system of sanitation, for the bedding has never been removed from beneath the horses, nor the stalls and boxes swept

out.' 'How can that be true,' said the king, 'for with my own eyes I observed that the straw is always clean and new?' 'True,' replied Zadig, 'but only that on the surface; beneath, and hidden from your Majesty's eyes, is soiled material compressed into a mass through frequent lying and standing upon, and it could not have reached its present condition under several weeks.' 'Continue,' said the king. 'Your horses do not get sufficient water to drink, for I observed that though by the hour of the day they were already watered, the sound of the stable bucket when moved caused many to prick up their ears and look anxiously round. The majority also receive too much corn, for their excrement is foul from excess. Your grey horses are not permitted to lie down at night in case they soil themselves.' 'How is this known to you?' said the king. 'For the reason that their hind quarters bear no marks of the straw, and as they had not been groomed when I saw them, the straw marks should have been evident. Moreover, though grey horses, their quarters were unstained, which they certainly would have been from lying on their dung at night.' The king motioned that Zadig should continue. 'Your forage store is badly placed, and there are indications that corn is carried away from your stables and given to others.' 'In what way do you arrive at a charge so serious?' said the king. 'By the fact,' replied Zadig, 'that I saw corn on the ground, and following the trail it led away from the stables, and through the garden of the palace to the high road beyond. Oats are out of place in a garden, and there was doubtless a hole in the sack which contained your Majesty's property. Nor,' added Zadig, 'is the matter of recent occurrence, for some oat plants have grown up, the result of seed dropped weeks ago.' 'Proceed with your report,' said the king. 'Your young horses are being worked beyond their strength and years, for many are brushing, and already the legs of some are looking worn, though the age of the horses tells me it is not long since they were broken. Among those responsible for riding your Majesty's horses is one with a temper unsuited to the work; he is rough in his methods, for the chastisement of yesterday may still be discerned by the marks of whip and spur. His violence and roughness in dealing with these horses is shown by their extreme nervousness and apprehension when approached, and more than one bore marks of injury to the eyeball where it had been struck by a whip. The man who did it was left-handed, for in each case the near eye of the horse was the injured one. That the marks on the side were inflicted by a spur is evident from their position, and I also observed dried blood and hair on the spurs of one of your servants. Your Majesty, as a humane man, will be pleased to learn that one of the horses so treated threw its rider.' 'How can that be known to you?' said the king. 'By the long spur mark up the horse's flank,' replied Zadig. 'Among your Majesty's young horses is one with a severe cold, but I did not see him.' 'In that case,' said the king, 'how can you possibly know?' 'I entered the empty stall, and the wall above the manger, and the manger itself, bore the fullest evidence of being

occupied by a horse with a severe cold, for a considerable amount of discharge had been snorted about, and some rubbed on the wall. Moreover, the case is a recent one, and was in that stall this morning, for some of the discharge was still quite fresh.' 'Leave the young horses,' said the king, 'and tell me something of those which are at work.' 'Your Majesty would be well advised to have the windsucker standing third on the left in your sixteen-stall stable removed.' 'How can you so precisely indicate the horse which is windsucking? Did you see him doing it?' 'No,' replied Zadig, 'I heard him.' 'But that might be any other horse than the one you mention.' 'It might, your Majesty,' said Zadig, 'but the one I have indicated is the one so affected, for the manger bears the marks of his teeth, and the teeth themselves are worn away.' 'What of the others in the same stable?' said the king. 'The seventh horse on the left has some affection of the back teeth, for I observed he dropped the food out of his mouth when partly masticated, and I found several such masses in the manger.' 'How long has this existed?' inquired the king. 'Not long,' replied Zadig, 'for the horse's condition is scarcely yet affected thereby.' 'Continue,' said the king. 'In the same stable were several cases of thrush.' 'How do you know of their existence?' 'By the smell,' replied Zadig. 'You have also a roarer in that stable, though I cannot indicate him without more time.' 'Then how do you know of his presence?' 'I heard his cough,' replied Zadig. 'But many horses cough which are not roarers,' said the king. 'True, your Majesty; but a horse which coughs as a roarer coughs cannot be other than a roarer.' 'Is there much more wrong in that stable?' inquired the king. 'Only that you have a case of stringhalt in the bottom stall on the right, for I noticed he snatched his hind leg up when made to move. You have also a confirmed kicker in that stable, for, apart from the fact that the woodwork of the stall has recently been repaired, I observed the off hock was capped, and the replaced woodwork on the right of the stall was already deeply indented with the shoe. He would be better placed by himself, for he kicked his stable-companion this morning.' 'Did you witness this?' said the king. 'No,' replied Zadig, 'I saw a small wound on the near hind shank, which could only be a kick, and it was fresh.' 'Is there any further trouble in that stable?' 'It would be well to place in a safer position the horse that stands near the door on the right, as he both bites and kicks.' 'How do you know that?' asked the king. 'The expression of his face and eyes and his ears laid back tell me that he bites; the whisking of his tail informs me he is a kicker.' 'Tell me something of my sick horses,' said the king. 'It is a great pity that nice young horse in the first box will die,' replied Zadig. 'Die,' said the king, 'why, the Grand Huntsman said he was better to-day.' 'He is worse, your Majesty; he has acute pleurisy, and since yesterday he has got water in the chest.' 'How can this be known to you?' said the king. 'He is young, and pleurisy is common in the young; he stands in one position with his elbows turned out;

he is breathing rapidly, and grunts every time he breathes.' 'Why?' inquired the king. 'Because it hurts him to fill his lungs with air.' 'Explain how you know there is water in the chest.' 'The peculiar movement of the flanks in breathing tells me this with certainty, and I judged that it occurred since yesterday, as your Majesty was under the impression the horse was better to-day. An apparent temporary improvement commonly follows effusion.'"

I think at this point we can dispense with the further service of Zadig. I have endeavoured to illustrate how much may be learned about anything by keeping your eyes open, and your common sense at concert pitch. The value of close observation in veterinary practice can never be exaggerated; by means of it the puzzle may be put together piece by piece, and the examples given of the methods of Zadig are no exaggeration of flight or fancy. As a familiar example of acute observation, I would remind you of the extraordinary ability a woman possesses of taking in, with an almost imperceptible motion of the eyeballs, the entire costume from head to foot worn by another. The tints, the texture, the cut, the nature of the lace or embroidery —nay, even the price, are known at a glance, and, moreover, are not forgotten. The same sweep of the eye, though with greater deliberation, is what your patients should receive from you; be certain that there is something to learn if only you can see it. It is true that there are some clinical conditions where the symptoms are so obtrusive that they cannot be overlooked. For instance, one can diagnose lockjaw or laminitis as far off as the horse can be distinctly seen; they could even be recognized at a considerable distance with glasses. Choking, or, more correctly, impaction of the œsophagus in the horse can be diagnosed at a glance. There is no occasion to doubt the existence of an acute sore throat if food or water returns through the nostrils at every swallow. You need not believe the horse is unable to urinate, if with the hand in the rectum you find the bladder empty. Yet some extraordinary stories of such difficulty will be told you, even in the face of the floor being found wet when the litter is turned aside. If a man tells you he has picked out his horse's feet every day, and on looking at them you find them full of moss-litter on which the animal has not been standing for a week, you are under no obligation to believe him. There is no case in which the veterinary surgeon gets such credit for sagacity as in that rare affection arterial embolism of the hind limbs. This may be diagnosed from its history alone, though, unless you intend to ride for a fall, you will never make any diagnosis before seeing your patient. I would warn you, however, against regarding observation as a something readily acquired. As a matter of fact, accurate observation is most difficult to secure, owing to defects in memory, but more commonly to actual defects in observation. To prove this show the same object to a dozen people, and then let each separately describe his visual appearance of it. People have to be trained to observe, though here, as in everything else, there are men who possess a natural

aptitude for the work. I doubt very much whether without this natural aptitude a man will ever become an acute observer. Training, and training only, will make an accurate observer, and such training cannot be begun too early; there are endless common objects which lend themselves to study. No horse should pass us that we should not look at. There is always something to see, something to observe, especially in the make and shape of the limbs and feet, and locomotion; even a footprint is full of interest.

Not only the sense of sight, but the senses of hearing, taste, smell, and touch have to be educated for the purpose of diagnosis. A case of canker in a stable may be detected by its smell; a roarer and a broken-winded horse may be known by the distinctive coughs without in either case the patient being seen; the feel of a sprained tendon in the dark tells us as much as though it were in broad daylight. By the sense of hearing we can detect with certainty the existence of a loose shoe, though we may not see the horse. The sense of taste, though rarely employed, may occasionally be found of service. On this point a useful object-lesson was one day imparted in the wards of a hospital in Vienna, and the story will bear repetition.

The professor of medicine was lecturing at the bedside on the disease known as diabetes, and the urine of the patient was produced for demonstration purposes. Addressing the students, the professor informed them that in acute cases of diabetes the amount of sugar passed may be sufficient to give the urine a strongly sweet taste. Dipping a finger in the urine, he put a finger in his mouth. The students crowding around did likewise, and there was a consensus of opinion that the urine was sweet, very sweet. The professor then continued his address as follows: "And now, gentlemen, you have learned an important lesson as to the necessity for close and careful observation. If you had only observed me carefully, you would now know that I dipped my first finger into the patient's urine, and put my second finger into my mouth."

I must pass now to a consideration of the other quality, *i.e.*, judgment. This is defined as the comparison of ideas to elicit truth. It is infinitely more difficult than the art of observation, and requires a longer apprenticeship. The judgment required of a practitioner is not only that which pertains to the study of disease, but to the no less difficult subject of the study of man. Unless you become a good judge of human nature you will not make a successful practitioner, though you may be a veterinary surgeon of more than average ability. The judgment, however, that I desire to refer to is that connected with the diagnosis of disease. Every horse suffering from a pain in its inside is not suffering from colic; our judgment must decide the point. Every animal with a swollen leg is not necessarily suffering from a sprain of the back tendon. Every horse that rubs himself is not affected with mange. And, generally, it may be stated that the mental analysis of symptoms and evidences constitutes the essence of judgment, which is directed by experience and the

application of the senses. Of two horses discharging from a single nostril, in one case the discharge being odourless, in the other fœtid, the sense of smell has at once differentiated—I had almost said diagnosed—these cases. In the examination of horses for soundness—the most responsible part of our difficult work—the judgment is largely aided by the sense of vision. It is with the eye we take in all four limbs from every aspect, and the eye catches irregularities of shape and size that may not be felt. But even visual judgment is liable to extraordinary errors, as may be seen in the diagrams on the wall.

Errors of judgment arising from defects in the sense of touch are also considerable. Some men have a very indifferently marked tactile sense, and are utterly unable to appreciate minute and important differences, a determination of which is probably of the utmost value. In the examination of horses for soundness, curb, spavin, ringbone, and sprain of the ligaments the tendons of the limbs are by some wholly decided by the sense of touch, but even when vision is brought to its aid, touch is still of extraordinary importance.

Errors of judgment from defective hearing are not so numerous, though a man who misses the "grunt" or faint whistle of a roarer may have to pay dearly for his loss of acoustic sense, while in clinical work it is a serious drawback in auscultation and other ways.

Defective eyesight is doubtless responsible for defective powers of observation. If the image is blurred it cannot be seen. Even a low degree of shortsightedness will make all the difference between a sharp observant man and an apparently stupid unobservant one. A man cannot observe what he cannot see, and I am certain that one of the qualifications for entering a veterinary school should be a correction of any visual defect. So much of our important work is done at a distance that it is impossible to train a man properly with uncorrected defect in his sight. This will be clear to you when you remember the examination of horses for soundness, and the inspection of cases of lameness.

In order to be good practitioners I urge you to train your observation and judgment, and be, as far as possible, independent of outside help in the diagnosis of disease. Look and see whether the patient does not tell you what is wrong. The absence of speech is no very serious disadvantage excepting in cases of lameness, and though the truth-saving advantages of a dumb patient may be neutralized by the untruthfulness and gross inaccuracies of those in attendance, the observant practitioner can silently afford to neglect most of what he hears.

Lastly, I have avoided, for the reasons previously explained, making any references to the duty you owe your parents and your teachers whilst students of this College, but this does not absolve me from reminding you of the duty you owe the profession, the ranks of which we hope you will shortly join. You are the heirs to all the ages. You succeed to an estate in the construction of which you have hitherto taken no part. It is left to you as an inheritance, its upkeep and the maintenance of its

standard are in your hands, for you will be living and in active practice when most of the present tenants are dead. On your shoulders and that of all the younger men in the profession rests the grave responsibility of maintaining the honour, dignity, and technical standard of your calling. The future of the profession lies in the hands of its younger members. I am a firm believer in young men; mistakes they will make, no one is free from them; but remember, the man who makes no mistakes makes nothing. Youth is essential to progress, to new ideas, to energy and vitality. Youth in its broad sense of freshness and receptivity lasts until forty, and a man who has not been heard of before that age will never be known.

Speaking recently on the Universities of the Empire, Lord Rosebery said he did not ask that its members should have brains, because brains come wherever there is a career for ambition. If I were asked to place my finger on the weakest point in our constitution, I should point to defective ambition. The remedy lies in the hands of the younger men. Ambition is the very essence of a useful life.

Take, therefore, the opportunity now afforded you of equipping yourselves for the responsible duties which await you when you leave this institution, strive for exactitude in everything, think for yourselves, be ambitious, and bear in mind that only the fringe of the great subject of disease has hitherto been touched. Endeavour to add something to the stock of common knowledge, and thereby leave the estate richer for your tenancy.

VICTORIA VETERINARY BENEVOLENT FUND.

At the quarterly meeting of the above fund, held at 10, Red Lion Square, W.C., on October 10, the energetic Secretary (Mr. W. Shipley, F.R.C.V.S.) presented the following report:—

I have to report that we have a balance in the bank of £39 13s. 10d. We have interest to come from Norwich Corporation stock £7 15s. 4d., and Consols dividend of £21 8s. 4d., making a total of £68 17s. 6d. We have liabilities estimated at £47 6s. od. for relief, and £25 3s. 9d. for printing, postage and general expenses, a total of £72 9s. 9d. A subscription is due to the London Orphan Asylum, the past subscription has been £1 1s. od., I think we should increase this.

Appended is a list of new subscribers since our last meeting, totalling £15 14s. od. We have to thank Mr. W. Roots, a life member, for a further donation of £10 10s. od., and the Committee for the arrangement of the annual dinner of the College in Dublin, for a donation of £6 17s. od., being the balance of their fund. To Mr. Thurston, the winner of the Victoria Veterinary Benevolent Bowling Cup, for £2 16s. od., being the entrance fees of the competition, and to Mr. Heatley, Woodbridge, for the sum of £3 6s. od., the entrance fees of a similar competition.

It would be a matter of congratulation if some other mem-

bers of the Fund could originate other schemes of social intercourse and by such means increase the donations to our Fund.

We have been able to obtain for two of our old recipients the Old-age Pensions, thus saving the Fund £18 4s. od. a year. I recommend that the grant to Mrs. Margaret Jones be increased from 8s. to 10s. per week, we shall then have at least four widows in receipt of £26 per year, an object which I hope we shall obtain for all our pensioners.

I also recommend an allowance of 10s. a week to Miss Horton to assist her in the education of her late brother's children. This case has been under consideration for some time. The difficulties in getting full particulars have prevented me advising you before.

I think we may safely congratulate ourselves on the steady progress the work of the Fund is making.

It is with great regret that I report the death of Mr. Wm. Grinton, one of our recipients: the appreciative letter received from him when we increased his grant to 10s. per week should be a sufficient gratification to us that we did a great deal to make his latter days happy and comfortable.

I have other letters and applications for your consideration, and I only regret that the finances of the Fund will not permit of further grants, except that of Miss Horton.

I again appeal to all members of the Council to do their uttermost to increase the number of subscribers so that we can afford relief to the more pressing cases.

At last Christmas two gentlemen who wish to remain anonymous paid for an appeal in the veterinary journals. The Veterinary Press met us and inserted the appeals at a nominal rate, for which we should tender out heartiest thanks. I should be glad if others would volunteer for a further appeal at next Christmas, and again I feel that if we could induce someone to pay for the issue of our annual report to all the members of our profession, thus bringing before their notice the distress prevalent in the profession and the good work we are attempting to do, we should get some way further in carrying out our object.

I am assured that it is only from the fact that the members of the profession are not aware of these conditions that they do not subscribe and help us in our work. I only suggest this because our funds will not permit of this expenditure.

Following on the recommendation at the annual general meeting, and our considerations at the last Council meeting, I have to ask you to recommend the names of say five gentlemen as a sub-committee for the consideration of cases of distress in Ireland.

We should endeavour to select gentlemen distributed over the whole of Ireland who will, I believe, have knowledge of most of the cases which come before us. I need hardly point out to you that without the help of such gentlemen it is quite impossible for me to make any satisfactory recommendation in application for relief.

It is still a source of very great regret to me that we have

not been able to make any appreciable increase in our membership in London.

On the motion of Mr. Trigger, and seconded by Mr. Burt, it was decided to increase the subscription to the London Orphanage Asylum to two guineas (£2 2s. 0d.).

On the proposition of Mr. Trigger, seconded by Mr. Abson, the Secretary was requested to thank the donors to the Fund as appearing in the Secretary's report.

An increase of two shillings per week to Mrs. Jones, and three shillings per week to Mrs. Barford, were authorized.

A temporary allowance of ten shillings per week was granted to Miss Horton, to assist in the education of her late brother's children. The Secretary was requested to make further inquiries in this case.

It was proposed by Mr. Gooch, and seconded by Mr. MacCormack, that the Veterinary Medical Association of Ireland be asked to nominate five members residing in Ireland, who are members of our Fund, to form a Committee for the consideration of, and recommendations respecting applications for relief in Ireland.

The Council were unable to accede to the further applications for relief, the applications were therefore referred to the next Council meeting. The relief to all the old cases is to be continued.

A vote of thanks to the Secretary concluded the meeting.

NEW SUBSCRIBERS TO THE VICTORIA VETERINARY BENEVOLENT FUND.

	Donation	Subscription £ s. d.
C. E. Harwood, Islington, N.		0 10 6
W. Roots, Boro' Market, London	£10 10 0	—
P. Turner, Ixworth		0 10 6
J. F. Healy, Middleton, co. Cork		1 1 0
R. J. Foreman, High Cross, Tottenham ...		0 10 6
W. S. Carless, Worcester		1 1 0
J. Brown, Invergosdon		1 1 0
A. Porrett, Preston		0 10 6
A. Renfrew, Broadway, Worcester		0 10 6
T. A. Douglas, Kilmarnock		0 10 6
C. W. Wilson, Berkhamstead		1 1 0
G. Davis, Swansea		0 10 6
F. Ware, C.V.D.		0 10 6
S. J. Motton, Penzance		0 10 6
T. E. Heath, Moseley		0 10 6
Wynn Lloyd, Carnarvon		0 10 6
Lieutenant-Colonel Griffiths		1 0 0
Professor Share-Jones, Liverpool		0 10 6
Arnold and Son, London		2 2 0
Willows and Co., London		1 1 0
H. H. Hide, Lower Edmonton		0 10 6
F. A. Heney, Dublin		0 10 6
		£15 14 0

Reviews.

Tropical Veterinary Bulletin. No. 1, vol. i, pp. 59. Published quarterly. Price 3s. net. Annual subscription, post free, 10s. London: Baillière, Tindall and Cox.

The first number of the above publication is a very excellent one and contains a synopsis of all the more important researches on tropical diseases of animals that has been published throughout the past year, including Piroplasmosis, Anaplasmosis, Trypanosomiasis, Leishmaniasis, Fowl Plague, Osteomalasia, and Foot-and-Mouth Disease. The volume also contains a lengthy bibliography of recent literature on tropical diseases, which could not be summarized in this number.

This publication is issued under the direction of the Honorary Managing Committee of the Tropical Diseases Bureau, and along with the *Tropical Diseases Bulletin* (annual subscription, 21s.) takes the place of the *Bulletin of the Bureau of Sleeping Sickness*. The General Editor is Dr. Bagshawe, Director of the Bureau, and the Editor of the *Tropical Veterinary Bulletin* is Mr. A. L. Sheather, whom we congratulate on the excellence of the first number.

Milk and the Public Health. By W. E. Savage, M.D., B.Sc., D.P.H., County Medical Officer of Health, Somerset. Pp. xviii + 460, with 35 illustrations. London: Macmillan and Co., Ltd. Price 10s. net.

We may at once state that this book by Dr. Savage should be purchased, and read and re-read by all engaged in Public Health work, whether medical or veterinary. Dr. Savage has made out an excellent case, if such were necessary, for better control of milk and the milk supply. He goes to the bottom of his subject, and while he admits that there is much exaggeration in some quarters as to the dangers of milk, yet it is so widely consumed as a food, so readily polluted, and is so intimately connected with the health of the community, that it should be studied and investigated from every point of view.

Dr. Savage has collected facts such as have never before been put together in the same volume, and he points out that, while existing knowledge is extensive, there are large gaps still to be filled up. Thus, Part I. consists of eight chapters dealing mainly with the Bacteriology of Milk, and the association of milk with human disease. In the latter connection are included accounts of various epidemics, such as the famous so-called Hendon Cow Disease. The author's conclusion, after carefully reviewing the whole of the evidence connected with the case, comes to the conclusion so long held by Veterinary surgeons, that "the evidence of the existence of true bovine scarlet fever is insufficient to

warrant its acceptance." He further suggests that "whenever the cow is a source of scarlet fever or other septic disease, it is acting as a carrier of organisms of human origin."

Part II., consisting of six chapters, is devoted to a detailed description of the bacteriological examination of milk, and the interpretation of results. Part III. consists of seven chapters, dealing with the Public Health Control of the Milk Supply, and includes an amount of Bang's and Ostertag's methods of controlling bovine tuberculosis, as well as special methods to obtain a purer milk supply. There are six appendices, consisting of orders, &c., controlling the milk supply, as well as a reprint of Mr. John Burns's Milk and Dairies Bill, which we hope may soon be passed into law.

This is a book that no medical man and no veterinary surgeon can afford to be without, and we especially commend it to candidates for examinations for Public Health diplomas and veterinary hygiene.

Personal.

PRESENTATION TO PROFESSOR H. A. WOODRUFF.

ADVANTAGE was taken on the occasion of the Annual Dinner of the Royal Veterinary College, on November 22, to present to Professor Woodruff, as a mark of the very high esteem in which he is held by his present and former students, an illuminated address and some very magnificent old Sheffield plate. The latter consisted of a very beautiful old table-centre dessert stand, and two fine specimens of double-twisted candlesticks. Mr. Lawrence, in asking Professor Woodruff to accept the presents, very suitably expressed the feelings and good wishes of the donors. In accepting the presents the Professor made a very kindly speech, referring to the excellent feelings which had consistently existed between his students and colleagues and himself, and the handsome gift would serve, however unnecessarily, to remind him of the many pleasant years he had spent amongst them.

A CHALLENGE CUP FOR VETERINARY INTER-COLLEGE RUGBY FOOTBALL.

PROFESSOR WOOLDRIDGE, who was mainly responsible for instituting the Annual Rugby Football Contest between the Dublin and London Veterinary Colleges, has presented a handsome silver Challenge Cup to be competed for by the various veterinary colleges. Although up to the present time the only fixture has been between the London and Dublin Colleges, it is hoped that others may enter for the Challenge Cup. By this means it is hoped to institute and foster feelings of personal friendly interest between students of the kindred colleges.

Mr. E. B. Reynolds, M.R.C.V.S., has been appointed Professor of Materia Medica at the Royal Veterinary College, Camden Town, London, and will commence the duties of the chair in January, 1913.

Translations.

NOTES ON THE COMPARATIVE PATHOLOGY OF THE NERVOUS SYSTEM.—OSTEOMATA OF THE DURA-MATER (SO-CALLED OSSIFYING SPINAL PACHY-MENINGITIS) IN THE DOG.

By Professor PETIT.

(Translated and abridged by I. S. C.)

The following passage occurs in an article on the "Spinal Marrow," by Trasbot, in the *Dictionary of Veterinary Medicine and Surgery*:—

"Chronic and spinal meningitis in our domestic animals is still less understood than myelitis, namely, the inflammation of the substance as distinguished from that of the covering membranes that envelops the spinal marrow. No one has hitherto published an authentic study of the subject. This absence of data might almost convey the impression of the non-existence of the malady. We ask if it is revealed by the indurations and ossifications in patches that are occasionally found in the dura-mater of old dogs. M. Goubaux, who has demonstrated three such specimens before the Society of Biology, considers that these lesions are not connected with meningitis, but that they are simply a condition of senility.

"We also have found similar lesions in dogs that before death had not exhibited any special symptoms, but we think the osteomata may possibly be attributable to some antecedent meningitis. It is always very difficult to trace the history of these cases. Usually there is a lack of observation, and it is quite possible to ignore the vague pain in loins and limbs which frequently constitute the only symptoms of the disease. Even when there is, in addition, a certain stiffness that is actually a slight contraction, owners do not necessarily notice all particulars; at best they can only pay but insufficient attention to details that would be of great diagnostic value to the expert.

However, our view of acute myelitis is corroborated by the following experience. A fairly old dog that had been paralysed for four or five days was brought to us. It died two days afterwards. The previous pathological history was as usual deficient. A *post-mortem* examination revealed the existence of acute myelitis, localized at a cervical enlargement, together with a thickening of the dura-mater and the arachnoid membrane, with numerous bony patches scattered throughout the length of the

spinal canal. Subsequently we learned that this animal had been disinclined to move. When it did so it had walked with its back arched and with a certain stiffness. In these reminiscences, is there not a strong presumption that the dog had been suffering from chronic meningitis? The sudden appearance of acute myelitis at the thickened parts of the meninges, accompanied by adhesion to the spinal cord, at any rate serves to convince us that there had been antecedently an obscure and predisposing malady."

Thus, without actually proving his contention, Trasbot connected osseous patches on the dura-mater with chronic meningitis. This opinion would be supported by most veterinarians both before and after him. Indeed, in volume VIII. of "Internal Pathology," by our learned colleague, Professor Cadéac, there is a long list of works which present the same view. Yet Gourbaux was not far wrong when long before he had attributed osteomata of the dura-mater to senile evolution. In February, 1885, he wrote of a communication by Nocard concerning two dogs attacked by false paralysis: "Bony patches on medullar membranes are not uncommon in old dogs even when the animals are in good health. I have established the presence of these patches in the dura-mater of four dogs out of fifty." So far back as 1853 he had made a similar communication to the Biological Society.

Professor Cadéac wrote that "The inflammation of the dura-mater, which is common in old dogs, is a chronic affection known as ossifying pachymeningitis.

This malady is singular; without any traces of meningeal exudation it exhibits itself anatomically by the presence of osseous patches in the thickness of the dura-mater. Sometimes they are scattered over the whole length of its fibrous sheath, but more often they are collected in some particular region—the lumbo-dorsal, for instance. These patches are undoubtedly of an osseous character, and never simply calcareous, and still less cartilaginous, being thin, slender, bony plates or scales, which are yellowish and translucent, rigid, and easily broken, even if slightly bent. Sometimes the corresponding extremities are joined, in which case their length contrasts with their width. They are sometimes more than five centimetres long. The projections against the arachnoid are not very noticeable, because these bony plates or scales are embedded in the thickness of the dura-mater, which remains healthy in the intervals. Around these isolated spots no trace of inflammation is noticeable from the beginning of their formation, and they apparently develop very slowly.

In considering these lesions, which are very common in dogs of a certain age, many writers have not only held them responsible for pachymeningitis (inflammation of the dura-mater), but also for paraplegia (partial or complete paralysis of the hind-quarters); this would be caused by the compression of the spinal marrow that has been presumed.

To these osteomata has also been attributed all evidence of

pain which could be explained by any compression of the roots of nerves. This hypothesis has also been advanced.

Yet it is not denied that the lesions can develop without creating any appreciable disturbance.

There is no doubt that paraplegia is common enough in dogs of a certain age. The fact is familiar to me through my special study of the subject with Dr. Marchant; but I consider paraplegia to be: (1) A remote consequence of chorea (St. Vitus' Dance), a term which is fundamentally wrong: as I have demonstrated elsewhere the malady might be usefully renamed *Rythmic paralysis*. (2) Paraplegia is also frequently the result of a fracture of the rhachis (spinal column), the diagnosis of which might be obscure. Sometimes it is due to a tumour—originally surrounding vertebræ—which, having insinuated itself into the spinal canal through some articulation, finally compresses the spinal marrow itself. (3) Paraplegia can be also consequent on *poliomyelitis*, that is to say, the inflammation, not of the dura-mater, but of the motor centres of the spinal cord, a condition caused either by infection or compression, or even rupture of the organ; but hitherto I have not been able to establish any connection between paralysis and bony patches on the dura-mater which I have very frequently examined *post-mortem*, completing these researches by a very special histological study of the spinal cord. Therefore, I consider myself justified in saying that established opinion on the subject is at fault. I do not even believe the presumed compression to be possible, because the dura-mater is not, like the *pia*-mater, right up against the spinal cord; there is a separation which is filled up by the *cephalo-rhachidian* fluid. It does not seem to be anatomically possible for the dura-mater, even when ossified, to press against the spinal cord and to set up any paraplegia, either slow or sudden.

Whether the spinal marrow is ever really compressed by osteomata in the dura-mater could be ascertained through more methodical autopsies than usual. Really observant examination, backed by histological knowledge of the parts concerned, would probably disclose in certain cases unsuspected inflammatory conditions, due perhaps to microbes, and quite independent of any other co-existing lesions.

Through a truly scientific inquiry the habitual error would be refuted, and it would no longer be usual to attribute every curious, obscure, nervous, or paralytic symptom to this so-called pachymeningitis.

The first point that I wish to emphasize is that there must be found some cause for canine paraplegia other than the supposed compression of the spinal marrow by osteomata in the dura-mater. My second point is that the bony patches in question are not symptomatic of inflammation of the dura-mater, in other words, of pachymeningitis: "ossifying pachymeningitis" is, therefore, a misnomer.

My convictions are derived from searching experiments and careful observations, which have established the fact that the osteomata of the dura-mater are similar to those that occur

without inflammation in other fibrous membranes or in tendinous expansions (aponeuroses), and that they must not be placed in the category of inflammatory osteomata, such as are found in inflamed tendons or ligaments, and in windgalls, &c.

My conclusions are that: —

(1) The pathogenesis of the osteomata of the dura-mater is as little understood as that of other osteomata.

(2) That these have nothing to with pachymeningitis.

(3) That they are not appreciably detrimental.

These two latter statements are contrary to classical opinion. —*Recueil de Médicine Vétérinaire.*

SQUILL POISONING IN A DOG.

By H. HOLTERBACH.

Poisoning with bulbus scillæ seldom happens in our domesticated animals. Fröhmer mentions 45 grm. as a fatal dose for dogs, cats, and swine.

A laundry owner whose place was infested with rats used some bulbs to get rid of them. They were as large as a man's fist, and were distributed about the court and laundry mixed with meat. In November, a prospectus from the seller, stating that the squills were harmless to other animals, caused them to be used indiscreetly.

Half a bulb was finely mixed with meat and kitchen residue, and put under a bench in the laundry. The owner's dog got at the mixture and cleared it up. Soon after he showed chewing and choking symptoms. In twelve hours he vomited yellowish, blood-streaked matter, spasm of the œsophagus lasting about ten minutes occurred, followed by a comatose condition.

At this time I was called in. Saliva flowed from the mouth, both pupils were distended to the maximum. The patient could not stand up, but in an hour and a half he was able to make a few steps.

The pulse was small and the heart beats only thirty-six per minute. No food was taken; there was great thirst; at the third or fourth attempt at swallowing vomiting movements occurred. Pressure on the stomach region and hind part of the abdomen caused groaning. Fæces were painfully passed in small quantity, and streaked with blood and containing shreds of epithelium.

Urination was absent, and remained so until the death of the patient. This was known, as the dog was kept in the room. Therapy was limited to the use of stimulants.

On the next day in the afternoon the dog seemed a little better, but on the following day he was comatose and paralyzed, and blood coming from mouth and rectum. Heart beats twenty-four per minute. He was killed at the wish of the owner. If the dog, as was certain, had eaten half a bulb, then from weighing the remaining half he had taken about 50 grm. of

juicy squill scales. There was no other poison besides that of scilla in the food; it was pure squill poisoning. The complete cessation of the action of the kidneys was noticeable.—*Osterreichische Woch. für Tierheilkunde.*

SEVERE CONTUSION OF THE KNEE WITH GREAT LOSS OF SUBSTANCE, PLASTIC OPERATION. CURE.

By Professor A. W. MÖRKEBERG.

A seven-year-old mare suffered from a very large contused wound on the left fore limb. The animal trembled on her legs, and could only advance the left fore foot with difficulty, but she could support herself on it if it was drawn forward for her. The other limbs were moved normally. On the right knee there was a broad contused wound 5 cm. long and 3 cm. broad. It penetrated the skin into the subcutaneous bursa. The contused wound on the left knee was an oblique one, oval, 6 cm. long and 5 cm. broad. The edges of the wound were severely crushed and irregular. In the middle of the wound the ends of the completely squashed extensor digitorum communis and the shreds of the lacerated tendon-sheath which surrounds it were visible. A finger introduced through the skin wound revealed a subcutaneous pouch. This extended 5 cm. beneath the under edge of the wound. In its depths the open intercarpal joint might be felt extending the whole breadth of the wound. The anterior surface of the lower row of carpal bones was rough, and appeared completely stripped of periosteum. On bending the knee one could see into the open intercarpal joint, and single hairs and particles of dirt could be recognized on the surfaces of the joint.

Prognosis at best was doubtful.

Treatment.—The animal was cast and chloroformed. After thorough disinfection the severely crushed edges of the wound were removed with the knife. Thus the wound was enlarged so that it extended for a length of 10 c.c. The shredded ends of the ligaments were levelled with the scissors, and other loose shreds of tissue in the wound cavity were removed. The pouch at the lower half of the wound was opened out by an incision 5 cm. long. The wound cavity was scraped. Also the anterior surface of the lower row of carpal bones stripped of periosteum was similarly treated. With the help of tampons dirt was removed from the joint. Then the open joint cavity was irrigated with a 3 per cent. hydrogen peroxide solution, and afterwards a small quantity of a half per cent. solution of silver nitrate was injected. Parallel with the inner edge of the wound and 5 cm. from it, in order to allow of stretching, an incision was made. Its edges were first drawn together by button sutures over iodoform gauze, and then united by the clasping sutures. Through the contra opening at the bottom of the subcutaneous pouch an iodoform gauze tampon was introduced. This abutted

on the shattered joint capsule. A sterile wadding and gauze bandage was put on, and over this a tightly bound linen bandage. In this latter a gutta percha support surrounding the back of the knee region was fixed.

The mare was put in slings. She supported herself well on the foot, was lively and had a good appetite. The first few days the evening temperature was just over 39° C., but was soon normal. The bandage remained on three weeks. On changing it the greater part of the wound could be seen to have healed *per primam;* there was only a small granulating portion in the middle.

On removing the iodoform gauze a small quantity of synovia issued from the contra opening, and this appeared also the next few days, when the bandages consisting of antiseptic compresses were removed. After use of a 10 per cent. alum solution the synovial discharge ceased. Four weeks after the operation the wound had healed completely. The joint was stiff, but by massage and bending and daily exercise the horse recovered sufficiently to go to work in seven weeks. A short time after lameness occurred and swelling in front of the knee, but after blistering it disappeared in eight days, and since that time the horse has worked daily in the streets of Copenhagen.—*Deutsche tierarzt. Woch.*

CHRONIC METRITIS IN A BITCH.

By H. HOLTERBACH.

A SIX-YEAR-OLD St. Bernard draught bitch which had been suffering from a vaginal discharge for about six months after parturition, and on which many drugs had been used as injections, was brought to me for treatment. On examination I found appetite and digestion good, there was slight diarrhœa, desquamation of the epidermis (eczema squamosum), vaginal mucous membrane swollen, and its neighbourhood covered with dry discharge.

The diagnosis was chronic purulent metritis.

Prognosis was favourable. This prognosis will be incomprehensible to many graduates!

Dael's investigations show that yohimbin produces such hyperæmia of the uterus as can be obtained through no other drug. I had proved the truth of this in two previous cases of metritis, one in a cow and the other in a sow, and later on have had successful results in fifty cows suffering from severe purulent metritis.

Treatment in this case consisted in the use of three half grey tabloids of yohimvetol daily; treatment lasted eight days.

Course.—The discharge declined markedly after two days; on the third day it lost its bad colour, was creamy and odourless; on the seventh day hardly any traces remained, and on the tenth day the bitch was discharged cured. Twelve days later she was killed by an automobile, and I had an opportunity of examining her uterus, and found it quite normal.—*Tierärztliche Rundschau.*

BROMODERMA.

By ARTHUR JORDAN.

After the use of bromine a rash frequently occurs which is known as bromine exanthema, or bromoderma. According to the reports of different authors this rash is distinguished by erythematous spots, in the middle of which are lentil-sized vesicles filled with fluid, or they are covered with a fine pea-sized encrustation; further, there may be isolated reddish-brown tumours as large as a pigeon's egg containing a considerable amount of watery pus, or covered with livid red scabs surrounded by circular plaques with nail-like horny appendices forced through the sieve-like permeated epidermis. According to Steiner the exanthema consists of different sized nodular soft, painful efflorescences, of which the smaller, red-coloured, correspond to a follicle; the larger formed by confluence of the smaller are coloured copper red, and secrete yellow pus. The author's observations on bromoderma correspond to those of the previous investigators. Therapeutically little can be done for the complaint. The only treatment which is always successful is to cease the administration of bromine.—*Dermatology Wochenschrift.*

ASPERGILLOSIS IN MEAT INSPECTION AT THE CENTRAL HALLS.

By RAYMOND.

Aspergillosis has been established in fifteen birds, namely, three fowls, five ducks, three geese, and four turkeys. These birds, exposed for consumption, and seized, showed at different parts of the respiratory mucosa (trachea and lungs), but above all at the region of the posterior air sacs lesions due to the presence of a pathogenic fungus, aspergillus fumigatus. In the trachea there were yellow, fibrinous exudates, little organized, covering the mucosa, almost always violently inflamed; on the surface of the exudate, but more particularly at its contact with the mucosa, the fungus assumed a greyish coat, almost black, formed by the mycelium and caridian apparatus of the parasite. In the air sacs the fungus had provoked a much more intense reaction, the cavity was obstructed by dirty yellow membranous formations, tenacious, more or less agglomerated, whose centre in places had undergone caseous or calcareous degeneration.

In unfolding these membranes one encountered blackish islets of mycelium, but the aspergillus was much more abundant in the fibrinous exudate which covered the mucosa of the severely congested sac.

Twice we have observed pulmonary localizations under the form of agglomerated pseudo-tubercles, some half caseous, others almost fibrous, but always at the centre of these lesions one could discern by the colouration some more or less fragmented mycelium.—*Hygiène de la Viande et du Lait.*

SPONTANEOUS PARALYSIS OF THE TONGUE.

By FRITZ KUNTSCHIK.

A SHORT time ago I was called to a horse with the message that he hung his tongue out and was unable to eat. On entering the stable, the horse whinnied and seemed quite lively. On further questioning, the miller told me that the animal had got loose in the night.

The horse, a well-nourished chestnut gelding, hung his tongue out for about 20 cm. on the right side. The tongue was of normal colour, and sensible to the touch. Saliva flowed copiously from the mouth. Folding and sucking movements were performed by the tongue; no swelling was present.

It was now sought to cause the tongue to be taken back into the mouth. In order to produce strong retractions of the tongue salt was rubbed in the organ. After a long time it was drawn into the mouth, and in order to retain it there a snaffle bit was put on.

On the following day the horse ate as usual.

For the origin of this paralysis, I think I am right in blaming the getting loose of the horse. In his attempt to slip the halter a temporary bruising of the nerve, which was not severe, occurred.—*Oesterreichische Woch. für Tierheilkunde.*

New Instrument.

IMPROVED TROCAR AND CANNULA.

IN cases of impaction of the bowels with tympanites I have found that this instrument is a great help—in this way: after the gas is

removed from the bowels I attach the rubber tubing on to the neck of the cannula and inject a quart of chinosol solution—one tablet of chinosol to a quart of warm water. It is a good antiseptic and

softens the impacted mass in the bowel. I expect there will be a great many cases of impaction of the bowels this coming winter, on account of the *bad* hay harvest, so I am sure veterinary surgeons will find this instrument of great use. I have given it a good trial, and find that it works well in these cases. We all know that abdominal cases are abominable cases.

The makers are Messrs. Arnold and Sons, Giltspur Street, London, E.C.

W. FRANCIS HUGHES, M.R.C.V.S.

Letters and Communications, &c.

Mr. G. H. Livesey; Mr. W. F. Hughes; Mr. W. Lothian; Mr. R. H. Smythe; Mr. A. J. Cattell; The Registrar of the Royal Veterinary College of Ireland.

Books and Periodicals, &c., Received.

The American Veterinary Review; Journal of the Royal Army Medical Corps; Recueil de Médecine Vétérinaire; L'Hygiène de la Viande et du Lait; Revue Générale de Médecine Vétérinaire; Der Tierarzt; Zeitschrift für Veterinärkunde; Berliner tierärztliche Wochenschrift; Osterreichische Wochenschrift für Tierheilkunde; La Clinica Veterinaria; Revista de Medicina Veterinaria; Board of Agriculture and Fisheries; Department of Agriculture and Technical Instruction for Ireland; Kennel Gazette; Agricultural Journals for the Union of South Africa and for Rhodesia; American Journal of Veterinary Medicine.

NOTE.—All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C. Telephone, 4646 Gerrard. Telegrams, "Baillière, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editors.

Manuscript—preferably type-written—should be on one side only of paper, marked with full name of author.

Illustrations for reproduction should be in good black or dark brown on white paper or card.

Advertisements and all business matters relating to the JOURNAL should be addressed to the publishers, Messrs. Baillière, Tindall and Cox.

FLUID EXTRACTS

Chemically and Physiologically Standardised.

For table of doses and method of dilution for production of corresponding Tinctures, please see our Drug List.

POWDERED DRUGS.

Ground in our own mills and guaranteed absolutely pure.

ANTISTREPTOCOCCIC AND TETANIC SERA, MALLEIN AND TUBERCULIN

Direct from the Pasteur Institute, Paris.

ANTI-BLACKLEG & ANTI-SUPPURINE VACCINES

From the Cutter Company, U.S.A.

CANINE ANTI-DISTEMPER SERUM

(Dr. S. MONCKTON COPEMAN, F.R.S.)

WILLOWS, FRANCIS, BUTLER & THOMPSON, Limited,

WHOLESALE DRUGGISTS,

40, ALDERSGATE STREET, LONDON, E.C.

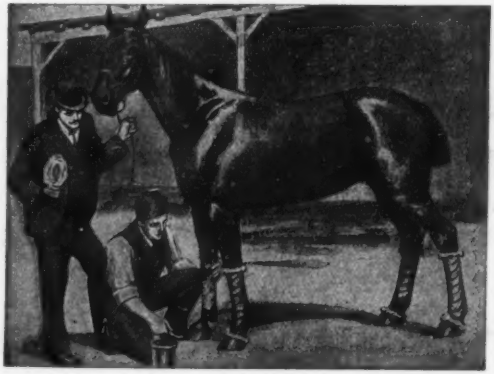
Telegrams: "FORTY, LONDON." Telephone: {171 LONDON WALL / 12530 CENTRAL

Antiphlogistine

(Trade Mark)

For HORSES, DOGS, CATTLE.

SEND FOR ILLUSTRATED BOOKLET.



PREVENTION OF ACUTE TENDONITIS.

It is the custom of many veterinarians and trainers after racing or exercising their horses to envelop the legs of the animal from fetlock to knee in Antiphlogistine, applied warm and thick, covered with absorbent cotton and roller bandages. This practice keeps the circulation active, gives strength to the vessels and tendons, prevents swelling, soreness and possible acute tendonitis.

To insure economy and the best results always order an original package, and specify the size required—Small, Medium, Large or Hospital.

THE DENVER CHEMICAL MFG. CO., LONDON.

Veterinary Bacterial Vaccines

CANINE DISTEMPER VACCINE, PROPHYLACTIC.

CANINE DISTEMPER VACCINE, CURATIVE.

COLON VACCINE.

EQUINE INFLUENZA VACCINE, PROPHYLACTIC.

EQUINE INFLUENZA VACCINE, COMBINED, CURATIVE.

STAPHYLOCOCCUS VACCINE.

STREPTOCOCCUS VACCINE.

STAPHYLOCOCCUS AND STREPTOCOCCUS VACCINE, COMBINED.

The above veterinary vaccines are being used with successful results.

The Canine Distemper Vaccines are supplied in liquid form; the other vaccines in Veterinary Hypodermic Tablets from which solutions for injection are readily prepared.

For further particulars apply to

PARKE, DAVIS & Co.,

50, Beak St., Regent St., LONDON, W.

ANATOMICAL AND PHYSIOLOGICAL

MODELS OF THE COW AND HORSE.

These models, which are indispensable for lecturing purposes, are half life size. They are composed of superposed plates, mounted on linen, coloured to nature, showing muscles, skeleton, ligaments, and internal organs in juxtaposition. The explanatory text is by GEORGE A. BANHAM, F.R.C.V.S. Opens out on both sides. When fully opened measures 10 ft., when closed 3 ft. 6 in. by 1 ft. 6 in. Can be hung upon wall or placed on easel.

PRICE 25/- each net.

Packing-Boards and Carriage within the United Kingdom, **2/- extra.**

PUBLISHED BY

BAILLIERE, TINDALL & COX, 8, Henrietta Street, Covent Garden, LONDON.

Results secured in both hospital and private practice have demonstrated to veterinarians that

THE CURE OF

Coughs, Bronchitis, Pneumonia, Laryngitis, &c., in Horses and Dogs

can be effected with greater certainty and promptness by the use of

Glyco-Heroin (Smith)

than by the employment of any other remedy extant.

COUGHS.—Glyco-Heroin (Smith) checks cough instantly, relieves obstruction of the breathing passages, liquefies the mucus, allays the pain, subdues nervousness, abates the fever and induces restful sleep. Relief is immediate and recovery is rapid.

PNEUMONIA.—Glyco-Heroin (Smith) relieves the congestion, disperses engorgement, reduces the fever, sustains heart action, calms nervous excitement, renders respiration free and regular and shortens the duration of the disease. It conserves strength and forestalls the development of fatal complications.

BRONCHITIS.—Glyco-Heroin (Smith) allays inflammation of the bronchial tubes, arrests the cough, begets free breathing, dispels fever, liquefies the bronchial secretions, restores the appetite, and prevents the disease from assuming the chronic form.

LARYNGITIS.—Glyco-Heroin (Smith) relieves inflammation of the larynx and tenderness of the throat, abates the fever, allays the pain, checks the cough, promotes the appetite and induces quiet sleep.

DOSE.—The dose for horses and cattle is one ounce every two or three hours. For dogs, ten drops to half-teaspoonful.

SUBSTITUTION.—To insure entirely satisfactory results, it is vitally important that veterinarians emphasise name "Smith" when purchasing or prescribing Glyco-Heroin (Smith), for many worthless substitutes for the remedy are offered by unscrupulous dealers.

LITERATURE.—Exhaustive clinical reports from the foremost hospitals and members of the veterinary profession will be sent, post paid, on request.

MARTIN H. SMITH COMPANY, NEW YORK.

Sole British Agents—

THOS. CHRISTY & Co., 4, 10 & 12, Old Swan Lane, LONDON, E.C.

TRADE MARK.

SUPPLIED ONLY TO THE PROFESSION.

TUBERCULIN and MALLEIN.

In Hermetically-sealed Ampoules, containing about 4 cc., 9d. each.

Veterinary Tetanus Antitoxin ...	... 10 cc. 2/6; Dry form 3/-
Anti-Streptococcus Polyvalent Serum	... 10 cc. 2/6; Dry form 3/-
Canine Distemper	... 4 cc. 2/6

PASTEUR VACCINE CO.'S TUBERCULIN for Diagnosis of Tuberculosis,
PASTEUR VACCINE CO.'S MALLEIN for Diagnosis of Glanders,
ARE INSISTED UPON BY
Foreign and Colonial Governments importing BRITISH STOCK.

Over 300,000 doses successfully used in U.K.

"BLACKLEGINE."

CORD FORM OF BLACKLEG VACCINE.

Single, 10 doses, 6/-; 20, 10/-; 30, 15/-; 50, 24/-.

Over 300,000 doses successfully used in U.K.

Double, 10 doses, 8/-. Needle Outfit, 2/6; Ditto with Forceps, 3/-.

Over 300,000 doses have been sold in the United Kingdom. The Easiest Method of Inoculation, and always ready for use.
We also furnish Anthrax and Blackleg Vaccine (powder form); Rat Virus, White Scour Serum, &c.

Sole British Agents:—

C. H. HUISH & Co., 12, Red Lion Square, London, W.C.
Telephone—4639 Central. Telegrams—PROSUM, LONDON.

The "Record" Precision Syringe.

The FINALITY of Hypodermic and Serum Syringes.

The **"Record"** Precision Syringe is a piece of delicate mechanical workmanship well deserving its name. It meets **all requirements as regards aseptic conditions and accuracy and it is always ready for use.**

It consists of **metal** and **glass** only. The glass barrel is ground inside perfectly true to cylindric form. The Nickel vacuum piston is "ground in" into the glass barrel by precision machinery so as to fit hermetically, it slides smoothly, yet tightly, **without any lubricant.**

The cover is fixed on the cylinder with a **bayonet-fastening**; for the purpose of **thorough cleaning** it is provided with a segmental incision, by means of which it can be detached from the piston-rod by sliding it off side-ways. When **completely** taken apart the Record Syringe **forms 3 parts only: cover, piston and barrel.**

The Needles are provided with the original "Progressive" **flat** mounts. By this arrangement a good hold is afforded to the operator.

The fixing of the needle itself in the mount, by means of a smooth longitudinal guide arranged above the screw threads prevents the needle from breaking off in the mount.

EVERY SYRINGE IS GRADUATED BOTH IN C.C. AND MINIMS.

Price with 2 Steel Needles in Metal Case—20c.c. 21/-. 10c.c. 17/6. 5c.c. 15/-. 2c.c. 10/-. 1c.c. 9/-.

C. H. HUISH & Co., Patentees and Makers of the celebrated "Progressive" Veterinary Surgical Instruments and Supplies

12 RED LION SQUARE, LONDON, W.C.

VETIOD

FREE IODINE IN VETERINARY THERAPY. - -

ADVERTISED ONLY TO VETERINARY SURGEONS.

"The Ideal means of securing the prompt and effective action of IODINE without injurious and painful by-effects."——

VETIOD ensures ready absorption of FREE IODINE but does not stain, blister or corrode the skin, or injure hair. In the hands of the Veterinarian VETIOD has proved most valuable in the treatment of :—

MANGE, RINGWORM AND OTHER PARASITIC DISEASES, HORSE GREASE, CRACKED HEELS, CAPS AND CURBS, BITES, TEARS AND WOUNDS OF ALL DESCRIPTIONS, SWOLLEN GLANDS, TUMOURS, ABSCESSES, GOITRE, AND ALL INFLAMMATORY CONDITIONS.

VETIOD is a thoroughly reliable Antiseptic Emollient in Surgical Operations and Obstetric Work.

VETIOD *is cleanly to use, does not contain any animal fats, and cannot decompose or become rancid.*

In Jars at 2/6 and 4/6 each, also in Steel Enamelled Pails (7-lbs.) at 35/- each.

(SPECIAL TERMS TO VETERINARY SURGEONS ORDERING DIRECT.)

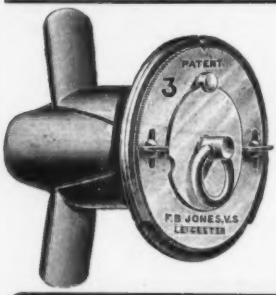
Samples sent free to Veterinary Surgeons upon request.

Manufactured by

MENLEY & JAMES, Ltd.

MENLEY HOUSE, 39, FARRINGDON RD., LONDON, E.C.

VETERINARY PRACTICE of over 50 years in Eastern District of Scotland for Disposal. For further particulars apply "Practice," c/o *Veterinary Journal*, 8, Henrietta Street, Covent Garden, London.



THE GENUINE
"JONES"
TRACHEOTOMY TUBES
Still the Simplest and Best for
Material, Workmanship and Design.
Price List Free.
Miss JONES,
Aberbraint, 28, St. Peter's Road, LEICESTER.
(*Successor to F. B. Jones, M.R.C.V.S.L., deceased.*)

CHLOROFORM
Of the highest degree of purity.
For Medical and Industrial purposes.
APPLY TO
THE UNITED ALKALI COMPANY, LTD.,
30, JAMES STREET, LIVERPOOL.

New Instruments for the Roaring Operation.

Literature: Recueil de Médecine Vétérinaire (Alfort),
American Veterinary Review
AND
Berliner Tieraerztliche Wochenschrift
1912, No. 29, page 530.

	£	s.	d.
Fig. 1.: COOK'S CURETTE ..	0	6	8
Fig. 2.: WILLIAMS' BUER ..	0	5	6
WILLIAMS' ROARING DILATOR	1	17	6

FIG. 1. SOLD BY FIG. 2.

A. FAVRE & CO., 21, Mincing Lane, London, E.C.
Sole Agents for H. HAUPTNER, Berlin.
Veterinary Instrument Manufacturer,
Specialities for Breeding purposes and General Farriery. Teaching Supplies.
Correspondence is solicited, and all enquiries will be promptly attended to. Hauptner's Catalogue, 1907, English Edition, sent upon application.

TRADE MARK 'WELLCOME' BRAND

MALLEIN AND TUBERCULIN

(Veterinary) (Veterinary)

FOR THE DIAGNOSIS OF GLANDERS AND : : : TUBERCULOSIS : : :

Prepared at the Wellcome Physiological Research Laboratories under the immediate supervision of specialists of wide experience.

The products issued by these Laboratories are subjected to the most rigorous tests in order to ensure the highest possible efficiency.

'Wellcome' Brand Mallein is issued in hermetically-sealed phials containing 1 c.c., at 9d. per phial.

'Wellcome' Brand Tuberculin is issued in hermetically-sealed phials containing 4 c.c., at 1/- per phial.

Distributing Agents for the Wellcome Physiological Research Laboratories:

BURROUGHS WELLCOME & CO., Snow Hill Bldgs., LONDON, E.C.

NEW YORK MONTREAL SYDNEY CAPE TOWN

V 14 MILAN SHANGHAI BUENOS AIRES

COPYRIGHT

THE

UNIVERSITY OF LIVERPOOL

VETERINARY SCHOOL.

SESSION COMMENCED SEPTEMBER 27, 1912.

Diploma of Membership of the Royal College of Veterinary Surgeons

The Examinations for this Diploma are conducted at the University. Complete courses of instruction are given in the several subjects of these examinations, and are specially designed to meet the requirements of students preparing for the Diploma. Excellent facilities for practical hospital training are afforded in the three large hospitals attached to the School.

The University Laboratories are completely equipped, and provide exceptional opportunities for the practical study of the various subjects of the curriculum.

Post-graduate Courses.

Courses in Comparative Pathology, Bacteriology, &c., are specially arranged for officers of the Army Veterinary Department, Colonial Veterinary Surgeons, and others.

D.V.H. Course. This Course taken during the Autumn and Lent terms, qualifies for the examination for the Diploma of the University.

Full particulars as to Preliminary Examinations, &c., together with prospectus, may be obtained on application to—

J. SHARE-JONES,
Secretary to the Veterinary Board.

"MAGNUM" PESSARIES.

(HEWLETT'S)

"Magnum" Pessaries are prepared with a medicated non-oily base, which is both effective as a Uterine Antiseptic and of special benefit in Parturition both in Cows and Mares.

A **"Magnum" Pessary** should be inserted directly after Parturition in order to maintain the Uterus in a healthy state. It can be inserted with the greatest ease, and will keep the parts in a thoroughly antiseptic condition for a lengthy period.

Alkaline "Magnum" Pessaries have recently been recommended to neutralise excessive acidity of vaginal secretion.

"Magnum" Pessaries are supplied according to various formulæ as below, and Veterinary Surgeons' own formulæ can be made up as required.

			Doz.		Doz.
"Magnum"	Pessaries,	Acid, Boric, 2 drms. ..	4/6	12 doz.	4/-
"	"	Acid, Boric, 2 drms. Iodoform, 1 drm. ..	6/-	"	5/6
"	"	Alkaline	4/6	"	4/-
"	"	Creosalgen, Surgical, 3%	4/6	"	4/-
"	"	Formaldehyde, 2% ..	4/6	"	4/-
"	"	Salol, 2 drms.	5/6	"	5/-
"	"	Salol, 2 drms. .. Iodoform, 2 drms. ..	7/6	"	7/-
"	"	Salol, 2 drms. .. Iodoform, 1 drm. ..	6/6	"	6/-

CANINE UTERINE PESSARIES.

(HEWLETT'S)

Prepared with a non-oily basis, which is of special benefit, when combined with antiseptics, in Parturition.

Canine Uterine Pessaries are made in **3** sizes: **small** (15 grs.), for Pomeranians, and Toy Terriers, &c.; **medium** (60 grs.), for Spaniels, Fox Terriers, &c.; **large** (120 grs.), for Retrievers, Danes, &c.

They can be easily inserted, and will keep the parts in a thoroughly antiseptic condition.

Canine Uterine Pessaries are supplied as follows:—

	Small.	Medium.	Large.
C.U.P. Acid, Boric, 15%	8d. Doz.	1/- Doz.	1/6 Doz.
" Acid, Boric, 15% Iodoform, 7%			
" Alkaline..			
" Creosalgen, Surgical, 3% ..			
" Formaldehyde, 2%	7/- Gross.	10/- Gross.	15/- Gross.
" Salol, 15%			
" Salol, 15% .. Iodoform 15%			

HEWLETT'S "LACTIQUE" TEAT BOUGIES,

For insertion into injured, or after operating on a Blind Teat, to prevent closing of milk duct. 1/- doz.; 10/6 per gross.

Introduced and Manufactured only by—

C. J. HEWLETT & SON, LTD.,

Telephone No. 1172 London Wall. ESTABLISHED 1632. Reg. Tel. Address: "Pepsine, London."

35—42, Charlotte Street; and
83—85, Curtain Road, London, E.C.

Face first text

RELISHED BY ALL BREEDS

Spratt's "WEETMEET"

Given either dry or soaked, "Weetmeet" is relished by all breeds. It embodies the valuable constituents of brown bread and our Patent "Meat Fibrine," thus becoming a genuine Builder of Bone and Muscle.

Dog Patients Readily Eat "WEETMEET"

WHEN OTHER FOODS ARE REFUSED.

WE SHALL BE PLEASED TO SEND VETERINARY SURGEONS LARGE FREE SAMPLES AND QUOTE SPECIAL TERMS.

SPRATT'S PATENT LIMITED,
24-25, Fenchurch Street, London, E.C.

Dr. J. Collis Browne's
Chlorodyne

The Original and Only Genuine.

Universally acknowledged to be the Most Valuable Medicine known. Doctors and the public in all parts of the world have used it with unvarying success for upwards of 60 years, and have testified to its efficacy.

For COUGHS, COLDS, ASTHMA, BRONCHITIS,

it is the Best and Surest Remedy.

Is the only palliative in NEURALGIA, TOOTHACHE, GOUT, RHEUMATISM.

In DIARRHŒA, CHOLERA and DYSENTERY, it acts like a charm.

It effectually cuts short all attacks of SPASMS, HYSTERIA and PALPITATION.

It checks and arrests FEVER, CROUP and AGUE.

When you ask for CHLORODYNE, see that you get **Dr. J. Collis Browne's.** The secret of its manufacture has never been divulged, and compounds called Chlorodyne cannot possess the same curative virtues. Purchasers therefore should see that the name is on the stamp, and emphatically **refuse all substitutes.**

Convincing Medical Testimony with each bottle.

Of all Chemists: 1/1½, 2/9, 4/6.

London: Printed by Baillière, Tindall & Cox, 8, Henrietta Street, Strand, London, W.C.